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I

CONTRIBUTIONS TO THE HISTORY OF AMERICAN TEACHING (VI) [1]

The educational conditions as they existed in the United States half a century ago are farther apart than even the conditions of social and civic life from the conditions of today. There were great teachers then and great scholars, whose name and fame are living in the world now: but the great teachers were few and rare and like the poet were "born and not made," and the great scholars worked out their scholarship and greatness under difficulties which only the strongest and ablest could cope with and conquer. All the more honor to them!

My personal experience of educational conditions is so unusual that I am hardly competent to speak of them from my own knowledge. "The roots of learning" were never very "bitter" to me, and "the fruits" began very soon to be "sweet"; for my father, the Bishop of New Jersey, was not only a scholar—"and a ripe and good one,"—but he was born with the gift of teaching, so that, unconsciously and unintentionally, he gave out of his abundant store to all who came within the sphere of his influence. In his earlier life (he was born in 1799) he pursued his studies under great difficulties, spending his leisure moments in Mr. Bogart's book-shop in Geneva, where he was frequently left in charge of the place

[1] The earlier papers in this series appeared in the EDUCATIONAL REVIEW for September and December, 1909, January, March and June, 1910.

while the proprietor was absent. Later on he gathered about him a rare and rich library in all departments, literary as well as theological, and he not only owned his books, but he loved them and he used them. The motto and the method of his life was "Nocturna versate manu versate diurna." There was contagion in any contact with him. There was gathered about him a company of teachers and scholars, to whom, after him, I owe whatever learning and imperfect knowledge I have. My own educational conditions were unusual and unique, for I was educated in my own home, using his books and with the stimulus of his companionship. The two great teachers of my boyhood and my earlier manhood were James Gilborne Lyons of Trinity College, Dublin, master in thought and in accuracy of knowledge, to whom a false quantity or a misplaced word in a quotation, or a mispronunciation, was a crime which brought down condign punishment; and after him came the great teacher Milo Mahan, unequaled then and unsurpast since in the accuracy and accumulation of his knowledge, classical and mathematical as well as theological, and in the rare charm of his methods of instruction and his personal influence. Of course, these are not fair instances of the educational conditions of that time.

The great advance and improvement in the last half-century are along three lines: First, in teachers taught to teach. I have a cordial dislike for the word "pedagogy" (which I always like to pronounce with both *g's* hard), but that which it describes is invaluable, because the acquisition of knowledge and the power to impart it are very different things, not always—indeed, I think not often—together; for very often the more the man knows the less he is able to give out of that knowledge in any orderly and impressive way. And where the teacher is not "born," which is rare, he must be "made"—trained to teach. The next advance is in text-books. As I remember my own struggles with the dull grammars and clumsy lexicons, and Greek and Latin readers with elegant extracts, and then note the recitations of a class of today, with its annotated text-books, its editions of authors with illuminating notes of reference, full vocabularies and dic-

tionaries in one volume, I measure the enormous advance and the great advantage of the student of today. I studied Anglo-Saxon as a young man, and had glimpses of Beowulf and Caedmon and the *Chronicle;* and I duly and delightedly read Chaucer, and gathered much interest in the growth and gradual changes of our mother tongue: but to do this I had to struggle with a great complication of volumes. Today, with the new textbooks, the journey over these old roads is made easy and most attractive. And thirdly, I note the change in the method of teaching: today the teacher, and not the student, pulls the laboring oar. We used to memorize certain facts and dates and learn by rote (it was called learning "by heart," tho neither heart nor head had much to do with it) passages out of books, and we used to plod thru literal translations from one language to another, transferring the words rather than the thoughts of the writer. Today a subject is given out to be studied, and the learners have their books of reference and headings from the notes they take down in class from the living utterance of the speaker. A period of history is studied in its various phases of facts, of literature, of leading men, of surrounding objects; and so subjects are studied and not merely books, and the whole outlook is taken in, and the whole atmosphere of place and period is absorbed.

I have an intense inherited and instinctive impulse to speak especially about the advance in the education of girls. The first two ventures in the higher education of women were made by my father in Burlington, N. J., and by Emma Willard in Troy, about eighty years ago; and these efforts were based upon the conviction, which experience and results have absolutely proved, that there is an absolute equality of intellectual ability and possibility in boys and girls, with a certain element of quicker perception in the girl's mind. My father's further motive was to develop the spiritual and religious element in education with and alongside of the secular element. Today everywhere in women's colleges and secondary schools for girls this movement has spread. Where it is controlled by the recognition of the inherent and essential differences of women,

it is doing good work; and the training of the mothers is, of course, a potent influence in the education of the world. I am tempted to quote my father's own argument and explanation from two of his addresses, in 1844 and 1846. "Why should a course of education for girls be less definite, less thoro, less complete, in its relation to their place in life, than a course of education for boys? What hinders that a plan of study for our daughters be marked out on a graduated scale, pursued, persisted in, accomplished, with the same accuracy, certainty, and completeness as for our sons?" "The course of female education is disturbed and hindered, in its substantial elements, by the priority which has been arbitrarily allowed to what are called the ornamental branches; as if the very notion of ornamental did not imply a substratum to be ornamented. None of these will be neglected; but each secured, in just proportion, in due subordination to solid and essential studies." "In all the elements of useful knowledge; in polite and elegant letters; in the exact sciences; in whatever is called, worthily, by that much prostituted name, philosophy; in the fine arts; and in all truly woman-like accomplishments; we resolve to spare no pains, or cost, for the improvement and adornment of the girls committed to our care."

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II

THE TEMPTATION OF A COLLEGE PRESIDENT

The President was seated in his office, fatigued after a day devoted to the internal affairs of the college. He had tried to save a boy from a course of life which would be his undoing. He had braced up another, a good fellow, who was becoming careless. He had had a long conference with his superintendent of buildings as to the best and most economical heating system. He had settled a controversy as to a charge of unfair treatment made by a group of students against an unwise instructor. He had given a lecture to a class on his pet subject of Greek literature. He had answered four mails bringing inquiries from candidates for the freshman class with many intellectual and financial weaknesses about which advice was needed; from candidates for places on the faculty to fill vacancies existing or hoped for; from an uneasy professor of another college who inclosed a blank, which he said he had sent to five hundred others asking for information as to the best place to purchase frying-pans for the college refectory and the number, shape, and size in millimeters of those most needed; from the best lecturer in America who would for ten dollars give his unrivaled effort on "The psychology of the forward pass"; from a lady who desired his name as honorary vice-president of an association to supply anti-bacterial bacteria to the children of immigrants; and from a miscellaneous assortment of seekers of detailed advice on subjects uninteresting to himself or any one else but the writer.

After it was all over, he had relaxed himself upon his chair and asked whether it was all worth while.

He had started a few years before full of hope and zeal, with a resolve to do just this sort of work. He had said to himself and his Board: "I want to make things in the college as sweet and stimulating as may be. I have a theory that if

you make a really good and wholesome college, patronage and money will come in largely unsought. If you gather together a faculty as effective and scholarly as your means will permit, and keep them down every day to their best work, with every encouragement possible in the way of favorable conditions, and ask them to take a human as well as an intellectual interest in every student, that somehow, perhaps slowly, the information will filter to the little group of parents who still control the destinies of their boys and who wish a real education rather than a collection of social and athletic distractions."

He had noticed some Presidents with ready tongues who occupied many pulpits, and addrest many schools and institutes, and whose services were much sought after because they were interesting and cost nothing—whose real object was not to inform their hearers, but to advertise for students. He had noticed others who much haunted the offices of wealthy men with a subscription paper, or sat by the bedside of expiring women of means to dictate a clause in their wills, and whose main usefulness was to gather in money for endowment or halls. He had not felt it in his heart to criticize either of these, for many unpleasant things have to be done in the line of one's duty. But he had himself no inclination to give much time to either field of endeavor, and preferred to try his chances in the way of making a really good thing by personal effort in the college, in close touch with every student and every teacher.

It had not been wholly unsuccessful. The college had grown in reputation among the better sort of people. The youth who wanted a "good time" had avoided it, and by natural selection it had grown into a more moral, a more quiet, a more scholarly, and a more industrious college than some others. It had also slowly grown in numbers, and some observant patrons, who appreciated its honesty and efficiency, had been liberal to extend financial aid. Its old students were taking a modest pride in its achievements and character, and the universities to which its men went for graduate work were noticing a quality and standard among them which made them very welcome.

All this past thru the mind of the President, and then the other picture presented itself. Other colleges with inferior resources were striding past his own in numbers. Their athletics and dramatics covered the land. They were talked of in the schools, and the boys who went with the crowd rather sneered at what they were pleased to call the spiritless and stagnant little college where growth was slow and "life" very scanty. The President knew very well how these things were brought about, and a course of action which would revolutionize his institution slowly shaped itself in his mind. He had a good foundation in reputation, equipment, and loyal, if few, graduates and faculty to build upon; now let him gather in his reward and make at one spectacular effort a growth that would stop all cavil and compel respect for what America applauds.

In the first place, he would abolish entrance examinations. He had asked honesty of his faculty, and, tho the questions were not unreasonably difficult, many good boys were marked out. Besides this, many others were frightened away. It was so much easier to present a paper to another college and have all this tedious process superseded that the line of least resistance carried them elsewhere. Something was gained, it is true, in quality and evenness of the class and in saving future losses, but scores of young fellows with kindling hopes were lost to him. Certificates were easily managed. He would sit in his office, receive the papers, and in September his professors and the sophomores would find a freshman class all nicely admitted and ready to be hazed. He remembers the explanation of the process by Mr. Dooley, something like this: "The President takes the boy into his Turkish room, offers him a cigarette, and says, 'Now, me dear boy, you are admitted. What brand of larnin' do ye wish studied for ye by me competent professors?'" Of course, many colleges have "accredited schools," but this last can be easily increased by presidential fiat. Some demand forms of certificate fortified by grades, but these are easily pigeon-holed. Why, indeed, should any aspiring American be kept out? If he is ignorant or crude, so much the more need of the enlightening and

refining influences of the democratic American college. The president saw in his mind, as a sure result of this plan, " The largest freshman class in the history of the college."

But when you had filled up your college with men varying by four years in development, in ability from brilliancy to stupidity, in industry from the grind to zero, how would such a team be driven? The American college, the President argued, must be democratic, not a place for the bright and ambitious aristocracy only. All must have a chance; indeed, the other sort needs it the most and must be leveled up. The tyranny of exaction and selection must be wiped out and examinations must not be allowed to discourage the unfortunate. To arrange this, the President remembered the advice of one of his fellow tradesmen, that if you give six questions on a paper that any one could answer, you could then give four more that no one could answer and so have an average paper, which would sound well, but reject none. In this way the largest freshman class might, in time, become the largest senior class in the history of the college, the crown and glory of the reformed policy.

But, then, what about moral standards? The college had rather prided itself on this point in the past, and the constituency had got to expect and demand them. But were they not too particular? Certainly the presence of a number of drinking and dissipating students needed collegiate care more than others. It was cruel to turn them out instead of reforming them, and the others needed contact with evil to prepare them for the worse experiences of after life. It was a pity that a lot of neutral and, in the main, well-intentioned boys from good homes should be drawn into their habits, but this was the inevitable effect of too great stringency in school, and the reaction had to come. Many a young man had gone thru a period of wild living and come out a respectable and respected man, all the stronger for his early experience. Altogether, it was well not to know too much about student habits, except to caution them not to bring disgrace on the college by riotous public demonstrations.

The next thought that past thru the mind of the President

in his "godly thoro reformation" was that many boys had not money enough to pay college expenses. The injustice of this struck him forcibly. A number of scholarships had been given out in the past on the basis of intellectual merit and scholarly conduct. But there were many who needed education who could not stand this test. It was undemocratic to exclude them. Above all others there was room for development among them, and to confine your places to the well-to-do in purse or intellect was too narrow for the demands of American civilization. Work to earn money would take valuable time. So the fees must be reduced or done away with whenever they became a burden. A kind of sliding scale would be instituted, and, while no nominal change would be made in the fees, elastic scholarships would be instituted to cover everything the student did not find it convenient to pay.

This, of course, would reduce college income, and salaries must be cut. After all, the President had revealed to him these high-priced Ph.D.'s were not the best teachers. For half their cost you could get men whose knowledge would not permit them to be tript up by the better students and who would be so fresh from their studies that they could appreciate the difficulties of the other sort. If they had to work up each lesson the day before, as the class did, they would know freshly wherein the trouble lay. Better work would be done for less money. The previous investments had been made because there had been some idea that really scholarly men had a stimulating effect which the drill-master could not exert, and that it was good for the college to have the reputation which a learned faculty gave, but it was perfectly well known that boys in school never considered this in the choice of a college, but assumed that in the comparatively unimportant matter of contagious learning all colleges were so near alike as to render it a negligible quantity.

Having thus adjusted the finances, other questions presented themselves. Should he make it a university? This would involve no expense, no change of policy, only a change of name easily got through the courts, and he knew that many a young man prided himself on being the possessor of a

"university" degree. This was worth thinking of, but he had heard some ridicule placed on what critical people called pseudo-universities, and he laid this matter away in his brain for further thought and turned to the absorbing question of athletics.

Here was something worth development and expenditure. Winning football and baseball teams had a real advertising value. Boys at home and at school, who paid no attention to the work of secondary importance of the classroom, knew just where a college stood in ball. Therefore, the teams must not only play ball, but they must play to win. To do this great players must come to his college and not elsewhere. He must secure them. Of course, he would not give out college money directly. Something could be done by scholarships and something by sham opportunities to make money. But best of all, the well-to-do alumni who felt an honest pride in the glory of their alma mater might, if they found a worthy youth thirsting for education, pay his bills, and if he incidentally proved a great pitcher or fullback, surely no one could expect that a man should be discriminated *against* simply because he was athletic. It would not do to make the team too good, however, for that would draw suspicion. If it should play on equal terms with Yale, people would say that it contained "ringers," which might hurt the college. It would need nice adjustment to have it just good enough to defeat the pet rival and not be open to damaging charges. But the President was sure that with the aid of certain trusty alumni he could manage it, and at the same time take the right side in convention on purity in athletics.

The President felt a certain glow as these projects past in review thru his mind. How he had in the past mist his chances to make a dashing democratic expanding American college, and how surely these plans would do it! How the papers would talk about him, and how success would bring success! But if these were not enough, a new thought came to him in this hour of inspiration. *He would adopt coeducation.*

He had been conservative on this question. He had argued that young men and women of college age were better apart, if

the purpose of college was study; that each would have a more true development without the very close proximity of the other; and that, at all events, the opposition of the Alumni and undergraduates would make success problematical even if desirable. But now how paltry seemed the first argument, and how cowardly the last! The keen eagerness of the girls of America for higher education should not be limited. Objections must be conquered. They were overrunning the equipment of the good girls' colleges everywhere, and still crying for admission at closed doors. He was reminded of the opening of a sermon said to have been preached by a woman minister of the Society of Friends, about a hundred years ago. "My dear friends," said she, "there are three things at which I marvel. One is that boys throw stones and other missiles at the fruit on the trees when, if they would let it alone, it would fall of itself. The second is that men go to war and make such efforts to kill one another when, if they would let them alone, they would die of themselves. And the third is that young men strive so hard to go after the girls when, if they would let them alone, they would come of themselves." Of course he did not sympathize with any of these statements, certainly not the last. But applied to colleges how delightful it would be to have students who, if he let them alone, would come of themselves and fill his college to the brim. The demand for boys was in excess of the supply, but ambitious girls were already asking to share with their brothers the college opportunities.

Full of the new policy, the President closed his reverie and his desk and went out on the campus. He met a group of students who greeted him with a cheery air of comradeship but with perfect respect. He knew every one by name and by character. "Our gym team won from Berkshire 36 to 23," said they, and a discussion of the good work of Brooke, the captain, followed. One or two wanted to talk to him about their studies, they were not in the right courses, or they wisht an opinion about an economic theory they had just heard in the classroom. Another was afraid that a certain unnamed freshman was going wrong and desired to approach

him the right way. It was a loyal, intelligent, clean company, who felt responsibility for the college and were full of interest in everything about it. They had come from good homes, not wealthy but wholesome. Some of them were working their way and had difficulties enough. They had all faced the entrance examinations and conquered them. They were fairly even in preparation and ability, and it was a pleasure to meet them in any subject. In the main they lived reputable lives and the neutral comers usually cast their lots on the side of decency. As he left them, the President felt some doubts of his plan to introduce an unprepared promiscuous assemblage of boys of dubious morality and intelligence among them. He left them and joined a professor whom he knew intimately, who was a ripe scholar in his field and an influential personality, and whom he had retained against the strongest bids from a large university. They talked familiarly about college matters and prospects, and then it occurred to him that here was one of the sacrifices he must make at the altar of cheapness, and another of his cherished dreams disappeared. At his home he found a group of girl graduates who were telling of the charms of the free life in their separate college, and all his old doubts about coeducation for college students returned. By this time the whole image had faded.

After all, he said, in the mental revulsion which followed in his clearer moments, does not the American nation need a group of institutions, where numbers shall not be a bar to close acquaintanceship, where each student shall have the peculiar training he needs, where scholarship shall be appreciated more than mercenary ideals, where physical and moral success shall count for something and not too much in the college mind, where every statement shall be honestly made good and every promise redeemed at par, where standards shall never be sacrificed to material success, and where a normal growth in numbers shall always be more than matched by growth in the facilities for their proper care and development.

III

A NEGLECTED CAUSE OF RETARDATION

I

Investigations in the schools of some of our principal cities have brought out the fact that the number is surprizingly large of those who, from one cause or another, are behind the grades which, at a normal rate of progress, they should have reached. The extent and causes of this retardation are engaging the attention of many educators, in order to discover the remedies for it. By far the most valuable contribution to the discussion of this problem has been recently published under the auspices of the Russell Sage Foundation.[1] Mr. Ayres's treatment of his subject is practical and illuminating, and his reasoning and conclusions should arrest the attention of all who have to do with the administration or instruction of our elementary schools.

It is not our purpose to discuss at length the conclusions succinctly stated at the end of each chapter or the methods by which they have been reached. It is enough to say that there is apparent no attempt to bolster up preconceived opinions. The author sustains his contentions with an abundant array of statistics, and much skill is shown in interpreting and getting at their true significance, with due regard to their defects and limitations. Further investigation, based upon uniform and improved scientific modes of keeping school records, may here and there modify somewhat the results obtained; but, in the main, they will stand the test of observation and experience.

From a survey of conditions in thirty-one cities, among

[1] *Laggards in our schools*, a study of retardation and elimination in city school systems.—By Leonard P. Ayres, A.M., Secretary Backward Children Investigation, Russell Sage Foundation.

them Boston, New York, Philadelphia, Cincinnati, St. Louis, Baltimore, Kansas City, Portland (Ore.), and Los Angeles, the author concludes that approximately thirty-three per cent. represents the number of retarded, or over-age children, in our city school systems the country over. "In the typical first grade," he says, "for every four beginners there are three other children who are repeating the work of the grade. The second, third, fourth, and fifth grades all contain considerable proportions of repeaters. The sixth is the first grade showing any dropping out of pupils. By this grade ten per cent. have left. The seventh grade shows such a decided falling off that only seventy-one per cent. remain. By the time the eighth grade is reached, practically one-half of the pupils have dropt out." Here certainly is a situation which should command the most thoro study in order to discover and appraise its causes and apply appropriate remedies.

Among the causes of retardation, the chief stress has commonly been laid upon physical conditions—defects of eyesight or hearing; abnormal growths in the throat or nasal passages, inducing imperfect breathing; defective teeth, attended with malnutrition; heart troubles; and a general low tone of the entire system and lack of constitutional vigor, showing itself in anemic or bad nervous conditions. It stands to reason that the presence of any of these weaknesses must be, in many instances, a serious drawback to the pupil's progress, often more of a hindrance than it is possible to measure. For the faculties and mechanism of the body are the tools thru which the mind works; and if for any reason any of these tools are out of condition and their natural, normal correlation with the mind is disturbed, the mental powers, whatever their native ability may be, can not act with vigor and efficiency until this co-ordination is restored.

In our present insufficient knowledge of the precise degree of influence of each of these defects, the author of *Laggards in our schools* is inclined to be cautious about drawing sweeping conclusions from the data thus far available. He concludes that, while physical defectiveness does have unquestionably an important effect upon the progress of many pupils, there is

a tendency to exaggerate the number of such defectives by lumping together indiscriminately those having slight with those who have marked physical defects. He further concludes that the duller children show a considerably higher percentage of enlarged glands, defective breathing or hearing, hypertrophied tonsils and adenoids than the brighter; while, as a rule, defective vision, as might be anticipated, is a far less influential factor in retardation. He recognizes the interesting and important fact that, as a child grows older, nature tends to throw off some of these defects, or at least to minimize them.

Another cause, to which a chapter is devoted, is irregular attendance, one of the most potent factors in retardation and one that has not attracted the attention it deserves. The author concludes from the figures at hand that in the case of less than three-fourths of the pupils does the total number of days of attendance amount to three-fourths of the school year, with the result that there is a low percentage of promotions and a progressive elimination with each advancing grade.

Late entrance is another contributory factor, tho he regards it of less importance than some others. Thru the neglect of parents or guardians, not a few children are left to grow up to the age of nine or ten with little or no experience of school-life. And when at last the child is sent to school, he finds himself far behind those of his own age; his mind, hitherto untrained, has acquired habits which it is difficult to shake off; he learns slowly, and, unless of some native ability and earnestness of purpose, he never quite succeeds in making good the loss entailed upon him by the lack of early school training.

At first thought it might appear that ignorance of the English language among the children of immigrants would account for very much of the retardation in cities, where there is a large population of foreign extraction. Mr. Ayres shows that this is almost negligible as a cause of retardation.

Without elaborating the point in detail, the author maintains that our courses of study are in advance of the capabilities of the average child, and that this accounts for much

of the retardation in our schools. To quote his own language: "As at present constituted, they are fitted not to the slow child, or to the average child, but to the unusually bright one who is able to follow them substantially as mapped out. The really exceptional child may even advance faster than the scheduled rate; but the average child can not keep up with the work as planned, and the slow child has an even smaller chance of doing so."

It would be strange if there were not some truth in this indictment of our courses of study. One of the most difficult tasks in education is to frame a course of study in exact adjustment to the ages and capacities of the pupils. The curriculum-maker must ever be on his guard, lest his scheme of study be upon too high a plane for the child's understanding. With all the painstaking effort which our most skilful and experienced educators have expended upon the curriculum, few persons will concede that they have made such a dismal failure as Mr. Ayres's sweeping criticism would indicate. As a matter of fact, the gulf between our school curriculums and the comprehension of the pupil is more apparent than real. The trouble is not so much with the course of study itself as with the way the teacher interprets it to the child. Its topics, principles, and processes must be brought down to the level of his understanding by explanation and illustration sufficiently simple and elementary to be readily grasped. If the child does not comprehend, it is more than likely, in most instances, that the fault is not in the curriculum, but in the methods of teaching. The teacher is in danger of thinking that, because his method of explication is clear to his own mind, it must be clear to the mind of the child. Unconsciously to himself, he fails to approach the subject from the viewpoint of the pupil; and accordingly the latter, if at all slow of comprehension, is left out of touch with the curriculum, loses his way, and, confused and bewildered, stumbles along as best he may. Here lies the weakness of mass teaching, especially in elementary schools, when it is divorced from the practise of individual instruction. The two combined in due proportion will enable the teacher to bridge the seeming hiatus

between the child and the course of study. The truth is our school curriculums are seldom responsible for retardation. Its cause lies deeper than that—in the inadequate, defective teaching which undertakes to mediate between child and curriculum. Any course of study is in the clouds, and will remain there so far as the child is concerned, unless his teacher uses effective means and methods to bring it within his comprehension and put him on familiar terms with it.

II

Conceding to the causes which have been enumerated all the influence which belong to them in producing retardation, there is another, not even hinted at in the volume before us, but which, in the opinion of many, plays a far more important part in hindering or preventing the normal progress of many pupils than any of the causes mentioned, perhaps as much as all others combined.

In most city school systems the lowest classes are the largest, seldom less than forty, generally in the fifties, and sometimes numbering from sixty to seventy, or even seventy-five, under a single teacher.

Now, what is the bearing of this fact upon the problem of retardation,—indeed, upon the entire problem of education? It means that the pupils in every such congested class are not receiving the individual training and instruction they especially require in the earlier years of their school-life. With so many, it is impossible for the teacher to give more than a modicum of personal attention to each. They have to be taught almost exclusively in mass. At the very time when the foundation of the child's education is being laid, when his mental habits are being formed which he will take with him as he goes on to the upper grades,—at the very time when his individuality most needs to be cultivated and the teaching to be skilfully adapted to it, when he requires the most personal guidance and watchful oversight, he is placed in a class too large to permit much of this individual tuition; he is almost lost in the many and must be left very much to his own devices. To the brighter pupils who can get along

with comparatively little individual teaching—tho even with them the finest results can be obtained only thru much personal direction,—a class of the size described is not so great a disadvantage. But the average pupil and the slow of comprehension, who together constitute three-fourths of almost every class, demand a great deal of patient, minute attention, if they are not to be left stranded in their grades, to repeat the work, until promotion time comes again.

Here, in brief, is the school history of many a retarded child. He enters at from six to eight years of age in a class numbering anywhere from forty to seventy pupils, each with peculiarities of mind and disposition which differentiate him from all the rest and, therefore, demand careful individual treatment if the school is to do for him what it should. The teacher has a twofold problem to solve—the training to habits of order and study, and, at the same time, the thoro instruction of every member of the class in the work assigned to the grade,—on the face of it, a most difficult, not to say an impossible, problem under the conditions stated. The child enters the school unaccustomed to the restraints of school-life. The subjects taught are new and strange. He is to be introduced to ideas and concepts that have never before come within his range of thought. He must be trained to give attention, and to think and remember, activities quite foreign to his mind, unless he is one of the fortunate few whose informal education is begun almost at birth, so that when they reach school age their minds are fallow ground, well plowed up and ready to receive the more formal education of the primary school.

The child, whose history we are following, is slow to apprehend or of only average ability and encounters difficulties that, from his angle of approach, are peculiar to himself. But because of its size, the teacher is obliged to teach the class mainly in mass, with little time to come into that personal, intimate touch with each individual mind which is necessary in order to understand and clear away the special hindrances that lie before it and to guide it steadily along the path of mental development.

And what is the certain result? The child in question fails to grasp the work given him to do. He does not take in fully the explanations made to the class in general and that need to be brought home to him personally and adapted to his own mental idiosyncrasies. He soon finds himself beyond his depth and unable to keep pace with the class as a whole, and, accordingly, loses interest and becomes discouraged, inattentive, lazy, and inert. He repeats the course a second term or year, makes his promotion, perhaps, and slowly passes thru much the same round of experience in grade after grade, until the fifth or sixth, when he leaves school for good, all too feebly equipped for the work of life.

Making every allowance for the few who are incapable of absorbing more than a moderate amount of instruction, however efficient or skilful the teaching may be, and for those more or less handicapped by adverse physical conditions, most of the retarded are such because they are not, and in our overlarge classes can not be, adequately taught from the very beginning. They can not be given individual training to the extent that is needed. They never recover from this neglect and are always behind.

Several years ago, Mr. Clarence F. Birdseye published a notable book, in which he made a plea for *Individual training in our colleges*. If such training is needed in institutions of the higher learning, most assuredly it is preeminently necessary in our elementary schools, where the foundation is being laid—strong or weak, broad and deep, or narrow and insecure—upon which the entire superstructure of the child's education is to be built. It is very generally agreed that the fundamental weakness of our methods of education is the failure to emphasize sufficiently the training of the individual, as an individual with special characteristics and aptitudes of his own. The consequence is that comparatively few acquire good mental habits—thoroness, accuracy, the ability to think clearly and to concentrate their faculties effectively upon whatever work they have to do. How few can be said to have learned how to study, altho they spend from six to twelve years in school, where studying is supposed to be the business

especially in hand and where those who profess to be engaged in it are called students! The lack of this thoro individual training from the very start lies at the bottom of most of the retardation in our schools and accounts, in large part, for the progressive elimination which goes on in larger and larger numbers from grade to grade, and for the fact that only one in ten reaches the final year of the high school. These results will continue just so long as the classes in the lower grades are so large that the teacher can not give sufficient attention to the training of each pupil. A class of fifteen, or of twenty at the most, is regarded as the normal number for the kindergarten. But the teacher in the grades immediately following the kindergarten is expected to achieve the best results with a class numbering from forty to fifty and upwards. With half this number, or at the outside not more than thirty, the control of the class will be much easier and the teacher will have more time and a better opportunity to study the needs of every pupil and adapt the teaching accordingly. There will be time to discover the special difficulties which confront each scholar, time to keep his interest from flagging, to follow him up closely in his work, and to arouse him from that mental inertia which is characteristic of the retarded.

The call of today is for the reorganization of our elementary schools in much smaller classes, with a view to the more effective training of the individual. The teachers provided should be equal to the best in any grade. Instead of receiving the lowest salaries, they should be paid accordingly, so that the position of primary teacher may be made more dignified and desirable for the most competent. The truth is, teaching in the lower grades is often lookt down upon as an inferior order of work, from which the teacher is glad to escape, instead of regarding it as foundational and as furnishing an opportunity to influence most profoundly the entire school-life, progress, and mental development of the pupil. Yes, round off the structure of public education with a splendid high school, equipped with all the conveniences and appliances for the best work and with highly educated and gen-

erously paid teachers; but the lower grades should not be left, as they often are, to occupy inconvenient and unwholesome buildings and to receive inadequate instruction, because of the size of the classes and because sufficient pecuniary inducements are not offered to retain in the service of the elementary school teachers of the highest quality and the most experience. Let sufficient emphasis be laid upon adequate teaching in our lower schools under the most favorable conditions, and we shall hear less of the retarded pupil in grammar grades and of the poorly prepared in our high schools. Fewer will leave school because they are unable to keep up with their classes. Education will feel an invigorating influence along the entire line, from the kindergarten to the college and the university.

It has been urged that the problems of mass instruction and of individual development are so entirely different that they should be kept separate and distinct. This may be true to a degree in the sense that they must be approached from a different point of view and involve a different method of procedure. But it by no means follows that the instructor is to employ mass teaching to the exclusion or neglect of individual instruction. To be thoroly effective, teaching the class as a whole must be supplemented by constant, intimate contact with every member of the class in his individual work. Such contact will make the general teaching more definite and direct and better adapted to the practical needs of the entire class. The clergyman, in preaching to his congregation, is likely to shoot wide of the mark, unless he makes it his practise to come into personal touch with his people, so as to acquaint himself with their individual religious, social, and intellectual needs. Such personal relations with his congregation will affect the whole spirit of his ministrations and render them far more helpful and influential for good. This is just as true of every teacher. In dealing with such large classes, the temptation is a strong one to be satisfied with a maximum of mass and a very low minimum of individual teaching, so that the latter has been in danger of becoming almost a lost art. Smaller classes, affording an opportunity

to spend more time in training the individual pupil, will go far to solve the problem of retardation.

A writer in *The psychological clinic* appeals to the comparative percentages of promotions in classes numbering between thirty and forty, forty and forty-nine, and fifty and upwards, to show that the size of a class has little or nothing to do with this question of retardation. Granting that, on the whole, promotion percentages do form as accurate a measure of progress as any that can be devised, yet they are far from conclusive upon the point in question. In the nature of the case, they are more or less deceptive and have all the limitations and defects incidental to any formal or mechanical gage of educational progress. Promotion averages mean much or little, according to the teacher's method of valuing the current daily work of the pupil, upon whether he is marked according to a strict or a liberal standard. In appraising averages, we need to know whether the teacher is himself qualified by a thoro, accurate scholarship and type of mind to pass judgment upon the attainments and real progress of the pupil. It is a matter of common experience that many who receive the promotion average are far from being thoroly prepared to take up the work of the next grade. Again, it is a pertinent inquiry, how many of those on the promotion list have been obliged to repeat the grade work before they succeeded in reaching the required standing for promotion? Even if there were only a small group of the retarded upon the promotion list, it would go far to invalidate the conclusion based upon the face of the statistics. After all is said, experience and common sense form a better test than comparative percentages of promotion as to whether retardation is materially affected by the size of classes. There are some things which can not be accurately estimated by mere statistics, some things in which the verdict of common sense and experience must stand in spite of what figures may seem to affirm to the contrary. Educational statistics require to be handled with much caution and reserve. We need to be on our guard, lest reliance upon them become almost an obsession, as if figures could settle anything and everything with absolute authority.

But it is urged that the expense of maintaining classes of not more than thirty pupils each in the lower grades would be practically prohibitive. Why should it be so? Enough money ought to be provided to secure the highest efficiency in elementary schools, even if it should be necessary to retrench somewhat in expenditures for secondary education. But if the needs of the former are fully understood, we believe our communities will gladly tax themselves, so that neither shall suffer from inadequate appropriations. The elementary school is emphatically the school of the people, where the masses receive their only education, so small is the proportion of those who pass on to the secondary school. The former should, in every respect, be placed upon such a substantial footing of efficiency as to give the best training to the individual child from the beginning of his school-life—the training that is fitted to make the most of his powers. Then those who do go forward into the secondary school will be far better prepared to reap its benefits. The results now obtained do not correspond to the large, in some instances lavish, sums spent by city and state upon education, because they have too long neglected to build aright from the very bottom.

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IV

FOOTBALL IN THE HIGH SCHOOL

The bystander, an excellent English magazine of sport, pastime, and travel, recently published an article on American football. It began thus: "Of all games played in the civilized world, the most execrable is American football, nor is there anything more unintelligible than the fascination which this brutal and degrading pastime has for an intelligent nation like America." Such is the English view of our great autumnal sport. Most of our high schools play this game. Is it a proper game for boys of that age and is it suitable to the athletic need of such institution?

In high schools of three hundred students there are usually about fifteen boys who participate in football. Of course, others try a while "to make the team," but fifteen will usually be a good average. This is only five per cent of such an institution's enrollment. In schools of larger enrollment the percentage, of course, is really smaller, and a larger percentage is likewise true of smaller institutions; but a fair average would be five per cent. of the entire enrollment of both sexes. This means that five per cent. of the high-school students are receiving athletic training during the autumn months; and that such attention is confined to the boys alone. What about the other ninety-five per cent.? Are they not to be considered? And besides, this five per cent. is composed entirely of boys, while high schools, according to statistics, have a great many more girls than boys. Is it right to give the boys all the attention and entirely neglect the girls? If athletics are so valuable for boys, are they not good also for girls and do they not justly need some consideration in this important matter?

These approximate five per cent. of athletes are naturally of athletic inclination, and are so because of early training or practise in that line. They have become specialists in a way,

have acquired a love for sports, and will continue to find means of exercise; and it surely is not proper to continue giving these still further attention and absolutely disregard the other ninety-five per cent. If athletics are good for this small percentage of athletically inclined people, why are they not good for the far larger number who are not athletically inclined?

Athletics should be for the vast majority of a school. Football makes this impossible. In fact, the participation in athletics by the whole school is an end devoutly to be striven for. Such can not be obtained when the entire interest is centered in eleven players and the remainder of the student body is spectator to this sort of gladiatorial struggle between the two trained bodies of contestants. The first thing against football, then, is that it athletically employs too few of our students.

That football is an excellent game for well-seasoned and trained athletes is admitted by probably a majority. It gives the elements of team work, manliness, resolution, and courage to its participants. It is a valuable athletic training. But it must be admitted that it is likewise an exceedingly dangerous game. It is especially so for younger and immature boys, such as compose our high schools. The principal fault of the game is that it is too dangerous for boys, hundreds of whom play it. They are usually insufficiently trained, and besides, their growing condition can not withstand its strenuosity. Boys play it in imitation of the college men. Youth is an imitator of mankind; and, since higher institutions go almost insane over football, so must the high schools. Consequently that game, with all its evils, that are prevalent in college from brutality down to professionalism, has crept into our secondary institutions. Every team has the same aim—not athletic training for its benefits, but to win from its opponents. The thought of victory has so entirely possest them that benefits and athletic training are a secondary matter.

This spirit to win at whatever cost has brought many evils, such as the professional coach, whose business is to put out a winning team; the monopoly on the students' time; and the demoralizing spirit ofttimes instilled into the schools them-

selves. When a decisive game is to be played at the end of the week, the scholarship is disturbed.

If the team is cared for by a faculty member, as is oftimes the case, it is certainly an added and severe burden to him. With full work as teacher, he has the added care of the football team. His evenings after school are spent on the gridiron, his Saturdays are occupied. The same is true of the members of the team. In fact, football does take a considerable amount of time, and its value is really disproportionate to the cost in time and energy of players and teachers who supervise games.

But the chief objection to football lies in its dangerous character. It is too strenuous and too dangerous a game for high-school boys. This year's death list shows more high-school students than college fatalities. College authorities admit that it is dangerous to their students, who spend weeks and even months in training and are really old enough to withstand its physical strain. If that be so, how much more dangerous is it to the young and growing boy, insufficiently trained, striving with equal vigor for success.

Football invariably tends to create a passion for warfare and sort of spirit of belligerency. There is a determination to win at whatever cost. Rowdyism, commercialism, and professionalism, with the spirit of betting, exist at many of these "unseemly gladiatorial contests under the name of friendly competition." At some football games there is more betting than at horse races, and so obnoxious and dangerous has this game become that five Pennsylvania colleges and universities have agreed not to play football until the rules are changed. This follows similar action taken by Cornell, Dartmouth, and the twelve Jesuits' colleges of the East; and on December 8, 1909, the Board of Education of New York City past a resolution, previously adopted by the Board of Superintendents, prohibiting football after January 1, 1910. They will not trust the rules committee to eliminate the dangers. Rules committees have been trusted too long already. They never will provide a game that is equally good for college and high-school students. This action of New York

City is the wisest thing they have done, and other high schools are following their example. Yet the game has its good points. With proper regulation it should probably have a place in college. Some people say that the people killed or injured in the contests were not properly physically trained or such injuries would not have occurred. If that be so, why don't they properly train them? If lack of "proper training" kills players, why don't they train them? Isn't a life worth that much bother? If anybody can possibly formulate a system of training, so as to keep the player's neck from being broken, when he comes in contact with half a dozen violently charging opponents, why don't they do so? Why don't they tell us how to train, to save broken necks, and broken limbs? It can't be done. Here surely "an ounce of prevention would be worth a pound of cure."

Football gives but few lasting benefits and lacks any permanent usefulness as a means of recreation. In order to become at all suitable for its strenuosity, the player must carefully train. Such is not the case in the enjoyment of such athletics as tennis, golf, boating, etc. Football is a sort of physical combat, played for a short time, then dismist forever. In fact, we would call a man demented who would play such a game after he quits college. It is very much unlike the recreation sports that may be enjoyed even to old age.

There are certainly many ethical reasons for the removal of the game. It often tends to lower moral standards. Players stoop sometimes to low things, such as disgracing themselves by unsportsmanlike conduct, both during the game and after. If on the opposing team there is a particularly good player, he must be "put out of the game." They try to injure him so as to weaken the opposing side. Such is done by foul means, and is often encouraged by the coaches and even spectators. This "putting him out of the game" is sometimes too strenuously done, and the victim is, as usual, carried from the field; but he fails to revive. He is dead, and surely is "out of the game." They administer their treatment too strenuously. Such things have occurred in the game of American football.

The conduct of the student body is not always the best. Good studentship often suffers until after the football season. We ofttimes see the girls crazed over this mania, and hear them yelling until hoarse, and even marching the streets, giving vent to their feelings by yells, sometimes bordering onto profanity. They seem "to have become tainted with the wretched passion for dangerous gladiatorial combats that takes the fair women of Spain to see the bullfight on every Sunday afternoon."

Thus it will be seen that this sport is confined to too small a majority of our students. Football is a strenuously dangerous game, and should certainly be eliminated from high schools, where the players are tender growing boys. It has bad moral effects, lowering the standard of studentship, virtue, and refinement. The game gives the student very few permanent values. But what must be done? Shall we eliminate and thereby stop most of the autumn athletics now carried on by high-school students? Sane thinking agrees that athletics properly controlled are of vast importance. Results prove it. We must not stop so good a thing. We must find a better solution than that. Athletics can not be dropt; boys would take them up outside of school, without faculty control, and worse conditions would result. There must be athletics; but that does not mean to continue the present kind of football.

The American game should be totally eliminated and all interscholastic contests should be abolished; because it involves too small a percentage of our students; and you can't get the whole school into athletics under such conditions. Instead of such hotly contested matches between schools of different cities or localities, let us institute interschool, interclass, or even better established clubs and have interclub games. Do away with the present form of football altogether; and instead, let us have the real game as played in England and Germany, called Association Football, where the ball is always kicked and never carried, where the player is never hurled to the ground with more or less violence, causing injury or even death. The English game requires more skill

and swiftness, but lacks the "dirty work" of our American game, which can be eliminated only by doing away with the "bodily contact" methods, and to eliminate that, with a few minor changes, would make our American game the genuine Association game.

It has already been said that high-school students are imitators of college people, and it may seem that the place, therefore, to abolish football is not in the lower schools; but is in the higher. There is little doubt that the concerted action of several of our university and college presidents could stop football. Why don't they do it? There must be some reason for keeping the game. If the higher institutions abolish this game, the smaller ones will do likewise. It is certainly true that reform should begin at the top, but are we going to continue a destructive game just because colleges do so? Are we so dominated by them that we can not do as we please? Certainly we can act as our conscience dictates.

So important to our high-school students is athletics that the school boards should establish a well-equipped gymnasium in connection with each high school. They should hire an efficient director, and attendance should be made compulsory. It should not be made unpleasant, but should be so conducted as to give a profound pleasure to every student. The director's efforts should be toward the whole school, and not to a particular team preparing for a game with out-of-town teams. Such contests should be totally eliminated. Contests should be confined to the school alone and carried on in the several branches of athletics. Such calls for services of a competent director of the gymnasium and manager of out-of-door sports; he should be selected with great care, be a good athlete, one who mixt well and greatly liked by the students. He should be a thoro, moral and Christian gentleman and should have no other cares than that of athletics, which, when properly cared for, will keep any man busy. Such a person would solve the majority of our high-school athletic problems, and would be a valuable member of any teaching force. He should, above all things, strive to give the entire student body good, wholesome exercise.

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V

OBSERVATION AND PRACTISE TEACHING IN THE NEW YORK CITY TRAINING SCHOOLS

In order to be eligible for entrance to any one of the three training schools for teachers in the City of New York, the candidate must have completed satisfactorily a four-year high-school course approved by the State Commissioner of Education, or a course in an institution of equal or higher rank, approved by the same authority, with a credit of 2,880 recitation periods of not less than forty-five minutes each. This course must include as a minimum 494 periods in English, 190 in algebra, 190 in plane geometry, 114 in ancient history, 114 in English history, 152 in American history and civics, 228 in drawing, 190 in biology, 190 in physics, 380 in Latin, German, or French, and 152 in vocal music. Each candidate must pass a satisfactory examination set by the State Examination Board in the above-named subjects, must pass a satisfactory physical examination by one of the physicians appointed by the Board of Education, and must be seventeen years of age on entrance or during the first term. Thruout the course of two years, the work of each student is scrutinized closely by the faculty. Membership in one of the city training schools is evidence that the student gives promise of becoming a good teacher.

The course of study provides a wise combination of theoretical and practical work. The training course includes a thoro study of the principles and history of education and methods of teaching, systematic observation of the work of expert teachers in the model school, and practise teaching as assistants and as independent teachers of regular classes in the elementary schools of the city.

The subject that receives special attention during the first

term is logic, or the science and art of thinking, four periods per week. The remaining subjects of the term are methods of teaching reading, spelling, phonics, and voice training, four periods; nature study, five periods; drawing and constructive work, three periods; penmanship and blackboard writing, two periods; sewing, two periods; physical training, two periods; singing, two periods.

The subject that receives special attention during the second term is psychology, five periods per week. The remaining subjects of the term are methods of teaching language, composition, and grammar, four periods; arithmetic, elementary geometry, and algebra, four periods; geography, one period; physical training, two periods; singing, two periods.

The subjects that receive special attention during the third term are the history and principles of education, five periods per week, and school and class management, two periods per week. The remaining subjects of the term are methods of teaching composition, literature, children's literature, story-telling, three periods; history and civics, four periods; elementary science, two periods; mathematics, two periods; drawing, constructive work, and blackboard sketching, two periods; physical training, two periods; and singing, two periods.

The by-laws of the Board of Education provide that not less than sixty minutes each week shall be given by the training-school students to observation of classwork and management in the model school. In this school the course of study is identical with that of the other elementary schools of the city, and student-teachers, in groups of five or six, observe the regular work carried on in the classes. This observation is directed by a carefully prepared series of suggestions and questions printed on leaflets. By the aid of these leaflets the students are taught what to look for; they are led to see the essential points in approved practise; they are led to cultivate the power and habit of observing all the activities of children. Altho they are provided with a general form of report, there is opportunity for much individuality in reporting.

Observation in the model school during the first term, while

in some respects general, is directed to an intensive study of school hygiene—to the seating, heating, lighting, and ventilating arrangements of classrooms—to schoolroom decoration, and to child study.

Child study is made prominent during the first term in order that the attention of teachers-in-training may be centered early on the learner rather than on the teacher's skill or the subject-matter of instruction. This study is emphasized also for the purpose of leading the student-teachers to give special attention to exceptional children, to those who are backward, mentally or physically defective, to those who are of the truant or disciplinary class, as well as to those who are exceptionally forward in classwork.

At first, the physical nature of the child is considered. The observer's attention is directed to the sitting, standing, and walking postures of the pupil; to his eyesight, his hearing, and his voice; to manifestations of physical discomfort arising from fatigue, poor ventilation, or other causes; to personal hygiene, exercise, and physical defects.

Observation of manifestations of the mental powers and development of the child, during the first term, is made an introduction to the psychology of the second term. In this work the students look for manifestations of different kinds of perception, of retentiveness, of power to form mental images, of power to judge and to reason, of emotional capacity, of will-power, and of self-control, repression, inhibition, and habit formation.

Child study, early begun and intelligently pursued, is sure to shape the student-teacher's attitude toward teaching thruout all of her later experience. The child rather than the subject naturally becomes the center of interest in school work.

Observation during the second term is directed to the essential features of good teaching and to the subject-matter of instruction. The students are given an opportunity to observe the development of a subject as it is presented in consecutive grades. The leaflets direct attention to the broad aim of education and the aim of each lesson; to the assignment, preparation, and development of lessons; to general and special meth-

ods; to the proper use of drills, reviews, and summaries; to the use of the blackboard and textbooks.

Besides the regular exercises in observation work of the second term, observations in one of the city training schools are made in connection with the study of psychology. Special leaflets are furnished for this work. Some of the suggestions are designed to help the students to collect data to be used by the classes in psychology in the development of psychological principles, while other suggestions furnish the occasion for applying those principles after formulation.

Observation during the third term is closely related to the general topics of study in the theory department. For a year the students have had their attention directed particularly to the child, to methods of teaching him, and to the subject-matter of instruction. They are now led to note the way in which teacher and pupil react upon each other. Teaching processes and the principles underlying are thoroly studied. Opportunity is afforded the students to observe the school as a whole, its organization and management, and to engage in some form of social service in connection with the school activities.

The criticism of the observation notes of the first-term class is made by the teachers of psychology; the criticism of second-term papers by the teachers of methods; and the criticism of the third-term papers by the critic teachers. By this arrangement the teachers of psychology gain an acquaintance with the students who are soon to be members of their classes and learn with some definiteness the progress made by the students in observing manifestations of the mental powers and development of children; the teachers of methods are led to work closely with the teachers in the model school, and are thus able to unite theory and practise; and the critic teachers are brought into close touch with the theory and model departments of the training school, and in this way are able to give the third-term students, who are soon to be in their charge as teachers, much valuable criticism and suggestion.

During the third term as students and observers, an opportunity is afforded for a limited amount of experience in teach-

ing. This experience is gained by presenting some topic to a training-school class, by teaching a group of pupils in the model school, by assisting backward pupils, or by taking entire charge of the class for one or more periods.

In one of the city training schools the second-term students remain one-half hour after school to coach backward pupils. This individual teaching is wholly voluntary on the part of student-teachers and on the part of pupils taught, with a definite understanding by the student-teacher that the instruction shall continue uninterruptedly for at least two weeks. The pupils are taught individually, or in groups of two or three. A careful record is made of the exact status of each child for the benefit of the next student-teacher assigned to the group. This line of work is sure to be of great benefit to both pupils and student-teachers.

At the close of the third term, those students who have completed the work of the theory department satisfactorily, and who have past a successful examination for license No. 1, are given temporary licenses to teach in the elementary schools of the city. The examination for this license is the one required of all candidates for positions in the elementary grades of the city; no exemptions are granted and no special advantages accrue because of the fact that the candidates are students in a city training school. The assignment of pupil-teachers to the several schools is made by the principals of the training schools, subject to approval by the Board of Superintendents. These students serve as pupil-teachers for one-half year at one dollar and fifty cents per day, and are given a thoro test in instruction and discipline. They serve as substitute teachers in place of absent teachers or as assistants in large classes. The test is thoro and often trying to the teacher-in-training.

In several of the schools of Brooklyn, by an arrangement between the principal of the training school and the principals of the elementary schools, a systematic course in practise teaching is being tried. For the first month the teachers-in-training are assigned to good first-grade teachers in whose classes they teach individual pupils needing special instruction,

or groups of children doing similar work, and later the whole class. For the second month they are assigned to second-grade teachers; for the third month, to third-grade teachers; for the fourth month, to fourth-grade teachers; and for the fifth month, to fifth-grade teachers. These teachers-in-training are withdrawn from their regular grade assignment occasionally to take the place of absent teachers, but return to their grade assignment as soon as they are relieved of substitute work. This plan of practise teaching has great possibilities in it.

The teachers-in-training in groups of about thirty are assigned to critic teachers. Each critic teacher visits the pupil-teachers assigned to her as often as possible, at least once or twice per month, observes their preparation for work, their intelligence and enthusiasm in teaching, their success in controlling a class, and in securing the best possible results. At the time of each visit the pupil-teachers are rated on a card prepared for the purpose on the following points: disciplinary ability, preparation of lesson, skill in presentation, power of exciting interest, skill in blackboard work, skill in drill, and executive ability.

One day each week, at the close of school, the pupil-teachers report to the training school to receive criticism and guidance. Personal criticism by the critic teachers alternates with suggestions on methods and management by the principal.

At the close of each term the students are rated by their teachers on general fitness. Those students who receive a unanimous vote of their teachers are rated A. In this rating the following points, or similar ones, are used as a guide:

1. Is she trustworthy?
2. Is she earnest in her attitude toward her work?
3. Is she steadfast in the pursuit of high ideals?
4. Is she persistent in overcoming difficulties?
5. Is she responsive to suggestions or criticisms?
6. Has she a helpful school spirit?
7. Is she punctual in the performance of school duties?
8. Has she good manners?
9. Does she seem to be physically fit for a teacher's life?
10. Is she mindful of the rules of the school?

11. Is she clean and neat in person, dress, and habits?

The observation work and practise teaching afforded the training-school students are of the highest possible value.

At the close of the term of practise teaching, all who have rendered satisfactory service as teachers are placed on the eligible list for appointment in the elementary schools of the city.

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VI

MATHEMATICS IN THE COLLEGE COURSE[1]

It can not be doubted that to many college men, especially of the older generation, the mental image of a mathematical recitation and that of the Last Judgment are alike in kind. Both proceedings seem enveloped by an air of inscrutable mystery and hopeless finality which one may not penetrate. The contrast between the saved and the lost is scarcely sharper or more discouraging than that between the student who knows and the one who does not. And any inquiry into the aim of college instruction in mathematics would seem to many an old graduate like prying into unknowable secrets.

The procedure was perfectly definite and inflexible; lessons assigned from a certain text; recitations on the same; a record for each student indicating his ability to reproduce the theory and to do the exercises. The final authority was " the book," the unpardonable sin to depart from its teachings. But any underlying aim or object was not discust.

So long as the trinity of Greek, Latin, and mathematics were in control of the college curriculum it was unnecessary to inquire into the aim of any branch. The Bachelor's degree was the goal of the collegian, and it could be obtained by no other means than by the regular course of prescribed studies, a situation which did not render explanation on the part of those subjects at all necessary. One of the most beneficial results of the elective system has been to force the classical and mathematical departments to justify their existence on rational grounds. After scores of years of authority in the higher education, it comes hard for them to get out into the open field of controversy and prove their usefulness against all

[1] Earlier articles in this series on college subjects appeared in the EDUCATIONAL REVIEW for April and May, 1910.

comers. They are ready to assume it without proof. But, with the modern languages eager for some of the time spent on the classics, they must meet the charge that a man of good ability can not read with any degree of ease a page of Greek after five years' study of the language, and, with all the sciences crowding for recognition in the college curriculum, mathematics must show cause why she should be considered an important subject of study, not only for the few who are specially fitted for such work, but for the many whose careers will lie in non-mathematical fields.

In this paper the discussion will be limited to the mathematical departments of colleges. In scientific and technical schools the work in mathematics is largely determined by the needs of strictly technical careers, and in the graduate schools of our universities the questions of aim and scope are relatively simple. In both technical and graduate schools the students are homogeneous in their tastes and their ambitions, and the profession for which their work is the preparation is definitely known.

The college faces the far more difficult problem of giving her students what is most effective for the development not merely of the technical mind, nor even of the scientific mind, but of the human mind. Whether the same instruction yields the maximum result in all three directions simultaneously is one of the questions that this article will discuss.

But first let us consider in what respect a college department may hope to stimulate mental development, the fruit of which we denote by the much-abused word, culture. I shall make no attempt to define culture by epigram. Such attempts usually result in a sacrifice of truth which more than offsets the advantage of definiteness in the formula obtained. We all look for certain qualities in a man of culture, the absence of which is a disappointment and a shock. In the first place, we expect him to be able to express himself in forcible, clear, and concise language. We assume that he can use his rational faculties; that he is not a creature of impulse, but that the practise of reasoning and making sound generalizations is a matter of mental habit. We also expect an educated man to

possess a certain breadth of mind, to penetrate back of the fact to the idea, to be on the lookout for the relations between things, and to be able to correlate principles and facts that seem quite independent to the untrained man. If the study of mathematics is preeminently adapted to stimulate these qualities, her place in the college curriculum ought to be secure.

One of the difficulties in the way of teaching the art of self-expression to young men is the inevitable fact that they have little to express. Their mental attitude is receptive, not assertive. Their experience has not yet filled them to the bursting-point, and what ideas they have are not sufficiently digested to afford the best of material for the purpose. As a consequence, the effect of the instruction is too often a lip assent to the general principles of "purity, propriety, and precision" in style without any conception of the application to their own mental output. So formal, indeed, does the school work in writing become, and so detached from its function of training in orderly self-expression, that it is no uncommon occurrence for the incoming freshman to inquire whether he is expected to "spell and punctuate" on his entrance examination in mathematics or Latin.

This weak point in rhetorical instruction affords a splendid opportunity for the mathematical teacher. For in mathematics the terms and concepts are, for the most part, very simple, and are all clearly defined and explained. The student may not know much about these concepts, but his knowledge must be clear as far as it goes, in order to be recognized as knowledge at all. And the subject is such that the teacher can easily observe a failure to comprehend the fundamental ideas and put the responsibility for poor results where it belongs. In no subject is it easier to insist on clear sentence structure and the habit of precise statement than in mathematics. Nowhere is it more effectively imprest upon the student that indefinite and ambiguous language goes hand in hand with loose thinking. This, I believe, should be one of the important by-products of college mathematical instruction—a training in the precise use of the English language.

It is difficult for a pedagog to recognize that man is by nature a reasoning creature. The old adage, "Experience is a hard schoolmaster, but fools will learn from no other," is altogether too complimentary. Only the wise man learns to avoid difficulty by experience. The fool does not learn at all, but continues to blunder. To afford just that delicate experience which introduces the youthful mind to the domain of reason, and gives him a realization of the power of logic, is by no means a simple matter.

Some psychologists contend that teaching a boy to reason in mathematics does not assist him in the development of ability to reason in other subjects—that all mental effort is specific in its effect and does not make for increased efficiency in any field other than the one in which the original work was done. It is difficult to take this discussion of the psychologists seriously. Those who have had experience with young men in the classroom have seen them gain in mental power under the stimulus of application to a particular subject. Many of us can actually recall from our own experience the discipline that brought out the definite conviction of a reasoning faculty in and of us.

This rational awakening bears the same relation to the intellectual development that the ethical awakening does to the moral growth. The experience is often definite enough to recognize and to leave a lasting impression. One of the most vivid recollections of my boyhood is that of the well-directed punishment which crystallized my hitherto dormant ethical sense regarding stealing and lying. Before this time, stealing and lying were to me non-moral; since then, they have been immoral.

To the teacher, the problem of finding the subject best adapted to bring to the surface this rational sense is a vital one. That it must be a subject in which the skeleton of logical procedure is obvious and of frequent application, seems clear. Descriptive subjects, like history and economics, conceal the skeleton too completely, while formal logic is nothing but skeleton. The languages may contribute to the end in view, but *a priori* considerations as well as experience with young

men both indicate that the rational awakening more often attends the study of mathematics than that of other subjects. This experience often comes before the boy gets to college. But even then the strengthening of the power to distinguish between the good and the bad intellectually is of such deep and far-reaching importance in the development of character that it should constitute one of the definite and explicit aims of college instruction in mathematics.

We may gain a suggestion for the instruction of the individual from the long and tedious education of the race. From the time when people made graven images to represent their gods, men have attempted to make the imaginary or the abstract seem real by the use of symbols. The symbols can be seen and comprehended, and thru them mankind has continually hoped to come into closer contact with the truth. This approach to the universal thru the symbolic is one of the fundamental methods of the human mind. Art, music, and religion are merely different aspects of the struggle to reach back to the truth thru the medium of suggestive or symbolic sight, sound, or feelings. In some way, by line, harmony, or aspiration, the Word must be made Flesh before we can comprehend it.

It would, indeed, be strange if our higher education did not make use, consciously or unconsciously, of this method of reaching toward the unknown, and it would be a reproach upon our system if we did not inform our students regarding the strength and the weakness of the method which they are all bound to use for better or for worse.

But the veil between the truth and the seeker for it is not always the artificial veil of symbolism. Often it is a tangle of facts, a hindrance and an embarrassment, unless the principle of which they are the evidence appears thru them. The teacher who is content to give his students merely the symbolism or the facts without a glimpse of the ideas that they stand for, is presenting the husks of knowledge rather than the nourishing kernel.

But what has this to do with the teaching of college mathematics? How may the study of geometry or the calculus in-

struct one in the power to grapple with the abstract thru the concrete? This function of mathematics to induct the student into the pursuit of ideas thru their imperfect representation has been apparent to teachers ever since the time of Plato. He speaks to the point when he says: "And do you know, also, that, altho they use and reason about the visible forms, they are not thinking of these, but of the ideals which they resemble; not of the figures which they draw, but of the absolute square and the absolute diagonal, and so on; and, while using as images these very forms which they draw or make, and which in turn have their shadows or reflections in the water, they are really seeking for the things themselves, which can only be seen with the eye of the mind?" Plato's somewhat sensational refusal to accept pupils not familiar with geometry was grounded on his belief that the best preparation for clear thinking about abstract subjects is a study in which abstractions are systematically visualized by figures and symbols.

This estimate of the educational value of mathematics is just as true today as it was twenty-three hundred years ago. Now, as then, the real and important thinking of the educated man deals with ideas and principles, and the ability to reason soundly depends very largely on the accuracy with which one moves back and forth between the general and the particular, and assists his understanding of the abstract by the use of symbols and analogies. It requires no argument to show that practise in this type of mental procedure is precisely what the study of mathematics affords to a preeminent degree. The danger of this kind of reasoning is also clearly displayed, particularly in geometry, where the insistence on a figure or set of symbols that truly represents the geometrical ideas is essential, and the ease with which incorrect results may be obtained by using an imperfect notation is most instructive.

What are some of the larger principles of which one can hope to give a college class an occasional glimpse thru the tangle of equations and operations? The mathematical subjects usually found in undergraduate curriculums deal with one or both of the fundamental domains of number and form.

The projective geometry is perhaps the only one which is concerned with questions of form exclusively, while algebra and the more theoretical parts of the calculus treat only number relations. Many topics introduce the two side by side, and use one to interpret the other. In analytical geometry this interrelation between number and form is most clearly in the foreground. But the teacher whose aim is not merely to "cover the ground" will emphasize at every turn the relations between these fields. The realization of the harmonious and symmetrical relation between the science of number and that of form is one of the most impressive experiences in many a young man's education. The fact that we may measure a rectangular parallelopiped by the product of its base and altitude may be robbed of its surprizing simplicity by taking it as the definition of the volume of the figure. But that the surface of a sphere is exactly four—not four and some trifling irrational quantity in addition—times the area of its greatest section denotes a precision of correlation that can not be the result of chance. Numerous other examples illustrate the same point. The relation between the volume and the area of the cylinder and the inscribed sphere; the correspondence between the simplest curves in nature, the circle, the parabola, and the like, with the simplest equations of analytical geometry; the symmetry of many of the uses of determinants; the principle of duality; these and many other instances bring home to any appreciative student the truth of the old precept that truth and beauty (or symmetry) are merely different aspects of the same thing.

The fact that these less tangible aims of mathematical teaching are prominently mentioned does not mean that there is any road to them, except by a thoro and patient mastery of the details of each daily task. These results are the cream which one can not expect to get, except with the milk, and as a result of the long and humble labor which produces it.

Let us now approach a little closer to the definite problems that confront the college mathematical department. The undergraduate courses fall roughly into two categories which we may characterize as the general and the advanced. It is

not necessary to go into detail as to just what courses should be included in each class. Local conditions would affect such a division more or less. But I mean by advanced courses those intended for students who will use mathematics professionally. In this class belong men who plan to enter some field of engineering, a few who will study mathematics or some science as a career, some who intend to teach in secondary schools, and an occasional man who takes the subject because he enjoys it. The latter type is almost certain finally to find himself in one of the other three groups.

Let us consider briefly the needs of the would-be engineer. As the college graduate usually enters his technical school in advanced standing, the mathematical requirement of the first years of that school must be met by the college. But the college should do more than to cover this minimum. The reason that the student attends college at all is that he may obtain a broad basis, not merely for his technical career, but for his life as a member of his family and as a citizen. In his professional school the applications of mathematics will be continually in the foreground. But the spirit of his college courses should be broader, not contenting itself with the study of the topics that lend themselves to technical application. For instance, in analytical geometry, chapters like those on inversion, poles and polars, and various transformations which display so clearly the inner meaning of the subject, should by no means be omitted, even tho they are not applied by the engineer. I do not for a moment mean to imply that the mathematical material which is of utility to the engineer should be neglected, or that the closest cooperation should not exist between the college teacher and the technical instructor. But I do mean that the aim of the advanced courses in college mathematics should not be dominated by the comparatively narrow needs of this class of students. No one can object to the inclusion of all the applications of mathematics that may be necessary, but the policy of making them loom so large as to hide the ideas and principles is not only bad pedagogics, but in the long run defeats its own purpose.

In these days we hear continually the cry for "practical"

mathematics. It reaches all the way from the first year in the high school to the university. It forces the writer of elementary textbooks to ransack tables of statistics to manufacture artificial problems that have no more to do with the science of mathematics than the medieval discussion of the number of the Beast of Revelation. In fact, it is almost bad morals to teach students that the function of mathematics is to find by the solution of linear equations the distances of the fixed stars, the number of school children in Chicago, the proper relation of protein to carbo-hydrates in the diet, and the length of the Zambesi River. Like artificial stimulants in medicine, these methods should be used sparingly and with a clear recognition of their dangers.

For the actual needs of his profession most engineers require very little mathematics beyond the elements of the calculus, and most of his application of the calculus may be made by the use of tables. If the college or technical school were to come down to a rock-bottom, "practical" basis, they would omit all of the theoretical material and most of the exercises in the mathematical courses, and merely give a year's work on the use of various kinds of tables. But not even the most ardent exponent of the "practical" would defend such a plan. Every one recognizes fully the principle that students must learn much more theory than is actually applied in order to comprehend the minimum that is needed.

The aim of the advanced courses should, then, be broader than the professional demands of the technical students would require. This decision is of practical importance, since these students form by far the majority of those electing mathematics in the later years of the college course, and the temptation is naturally to be guided exclusively by their needs. The smaller class of men who plan graduate study of mathematics or physics form a more effective rallying center for these advanced courses. This does not mean that they should not continue to be conducted as undergraduate courses for undergraduates. Courses in which the instruction is aimed over the heads of the undergraduates at a few graduate students on the back seats are a misuse of college funds, and defeat their

own purpose of affording a regular and progressive study of mathematics from the college to the university.

The general courses include the more elementary work. Even when they are not required of all students they are elected by many who are only secondarily interested in mathematics, but who wish to take the subject as a part of a well-rounded education. These courses must be adapted to those who go on with the advanced courses, and at the same time to the much larger group of general students. The successful instructor in the general courses must continually keep the human side of his teaching in the foreground. The graduate-school professor may, with good reason, regard students as worthy of his serious attention, or not, according as they do or do not show mathematical promise. With him the human element may be almost neglected in favor of the intellectual. But one's duty in the general courses can not be so clearly defined. Many men will take, and should take, these courses who do not have unusual ability, and the teacher who can not stimulate the able mathematician, and at the same time give the average student satisfaction, is little more than half a teacher.

To bring this article to its logical conclusion, it would be necessary to discuss in detail the place of each of the mathematical topics in the undergraduate curriculum. Many of the questions which would arise in the course of such an examination would be local in their interest; others would involve methods of presentation demanding considerable space. The division into the general and the advanced courses is, however, fairly clear. That solid geometry, trigonometry, a little more algebra than the secondary schools are accustomed to give, and a little analytical geometry should be included among these courses all would agree.

Concerning the calculus, there is not the same certainty. This course is the keystone of the mathematical curriculum. It is the *sine qua non* of the advanced student and is often taken by the general student as a fitting climax for his mathematical study. No one with any aptitude for mathematics, who has studied the calculus under good instruction, can fail

to appreciate the new world which it opens. The crooked ways of the elementary mathematics which it makes straight; the dark places which it illumines; the unknown and seemingly remote fields which it makes familiar, are a revelation to any normal mind. It is interesting; for the power of its notation enables one to deal directly with principles and ideals which without it are hopelessly nebulous. It is, indeed, the climax and the cornerstone of college mathematics. Surely this subject, which above all others possesses the cultural qualities mentioned earlier, should be made accessible to as large bodies of undergraduates as are qualified to take it. It is most unfortunate that in most of our colleges the study of the calculus is delayed until the last part of the sophomore, or even till the junior year. This fact, together with the large amount of prerequisite work, prevents many students from taking the course who certainly ought to have it. It also leaves all too little time for the advanced student to elect as much mathematical work as he ought to get into his college course. The reason for placing the calculus late is to be found partly in tradition, and partly in an exaggerated idea of the amount of work which ought to precede it. I am convinced that enough analytical geometry can be incorporated into the usual course in freshman algebra so that a separate course in that subject is entirely unnecessary as a prerequisite for the calculus. This procedure enables colleges with the usual entrance requirements to begin the calculus at the opening of the sophomore year at the latest. From every point of view, the early election of this subject in college is a gain. For the student whose primary interest is science there can be no doubt of the gain; for the general student it insures an appreciation of the object and aim of mathematics which otherwise must be far from clear.

The acceptance of the somewhat intangible cultural aim of college instruction does not run counter to teaching the most effective applications of mathematics. It merely emphasizes the fact that the subject is worth while in itself, that it opens the mind to new relations and methods, and that its value is by no means limited by its applications, important as they are. Turning toward the practical as the explicit aim of a

college department is a confusion of the means with the end. The musical composer who simulates the noises of animals, the booming of guns, the rattling of kitchen utensils, may catch the ear of the crowd, but he fails to satisfy the artist, and this failure is great or small according as he is expressing the "practical" as an end in itself, or merely as a means of revealing the ideal. In education, as in other affairs, we should not be content to work for the lower, but should reach towards the higher, as a more worthy and inclusive end of our endeavor.

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VII

SCIENTIFIC METHOD IN EDUCATION[1]

I. THE METHOD

The scientific method is primarily a method of ascertaining facts, of discovering truth, and secondarily the method of conducting other affairs of life upon the basis of scientific facts and principles, the products chiefly of scientific method in the first sense. This paper has primarily to do with the method in its primary aspect. For the purposes in hand the chief factors in scientific method are the following, which, tho readily distinguishable, are not mutually exclusive.

1. *The development and use of a system of definite, clear-cut concepts embodied in a precise terminology.* Ambiguity of ideas and terms is obviously a serious handicap in any attempt to extend the bounds of human knowledge, or to organize and apply the same.

2. *The analysis of complex situations or wholes into their essential elements.* This is necessary for culling away the irrelevant and revealing the vital factors in the cumbersome complex with respect to the purpose in hand.

3. *Systematic and accurate observation and experimentation.* This is a requisite basis for correct reasoning, both inductive and deductive. Thru observation facts are gathered about things in their normal relations and situations; thru experimentation, facts which are more or less obscure on the surface of things are ascertained by the isolation of objects and forces under controlled and more or less artificial conditions.

4. *The expression of facts in exact quantitative terms, so far as possible.* The exactness and definiteness of ascertained

[1] A paper prepared in Dr. Snedden's practicum on administration of public education at Teachers College, Columbia University.

truth depends directly upon the extent to which the things involved are accurately measured.

5. *The consistent use of evidence as the test of truth.* This is a most crucial factor in scientific method. Since few facts admit of absolute proof, degree of credence must be proportioned to the weight of evidence. Scientific method is directly opposed to belief resting upon superstition, mere tradition, will to believe, or pragmatic utility.

6. *Limitation of the search for truth to fields where reliable evidence can be secured.* From the nature of its criterion of truth, scientific method discountenances the expenditure of more than a relatively inconsiderable amount of time and energy in a search for truth concerning those things which transcend the range of human experience or, without transcending it, lie beyond the range of its present possibilities.

II. APPLICATION TO EDUCATION

The actual and possible utilization of these six factors in educational study and investigation will be briefly considered in order.

1. Much of the difficulty that has been encountered in solving educational problems has been due to muddy thinking arising from hazy and vaguely delimited concepts. We are prone to think and speak in vague generalities. Too often we clumsily study and reflect upon important problems by the use of educational concepts, the limits and precise significance of which in our own minds we could not specify. The inevitable result of this turbidity of ideas is a faulty terminology; the same terms can not have the same meanings to different individuals. A second source of confusion in terminology is the disagreement of men with clear ideas over the application of terms thereto. Names are arbitrary at best, and different persons naturally assign meanings of varying quality and scope to the same words and cling tenaciously to their individual preferences. For example, educators and teachers can readily be found who have clear concepts of manual training, yet it would be the merest accident if most of the concepts of a group

of such persons did not differ in material respects from a large proportion of the others. So long as this indefiniteness of terminology continues, so long much time and energy and sweetness of temper will continue to be sacrificed in fruitless debates, the saddest feature of which is not infrequently the fact that many of the resolute participants are in fundamental agreement while firmly convinced of the contrary. Some of the numerous terms expressive of important educational concepts which have been the centers of wars of words, as a result largely of the conditions set forth, are culture, mental discipline, correlation, vocational education, practical, social, school efficiency, and the word education itself. Other terms which have not figured so prominently in educational controversy are equally vague and indeterminate in meaning.

Now it must be admitted that many ideas and terms current in educational circles can not be limited and defined with exactness. Many of the ideas are too general and abstract (a partial remedy for which condition is suggested in a later connection). Many of the terms are in popular use and are thus unsuited for exact scientific purposes. Their meanings must unavoidably be affected by the exigencies of popular needs; they can not be altogether prescribed even for strictly educational use. On the other hand, there are numerous educational concepts and terms that are quite susceptible of tolerably exact definition, but which nevertheless in current usage have marked variations of meaning. Among these are the words college, retardation, and vocational. Definite efforts should somehow be made to define with exactness and to standardize the latter class of terms and concepts, and to clarify the former so far as possible. It may even be that entirely new terms, not in popular use, should in some cases replace the ordinary ones, in order that we may realize in a measure the advantages derived by other professions, as law and medicine, from a distinctively professional terminology. It is entirely conceivable that the time is ripe for some concerted action to be taken providing for the systematic development of a scientific nomenclature of education. An authoritative dictionary or encyclopedia of educational terms would be highly

useful, provided it were clear and specific. In any event, names should be carefully chosen for new educational concepts as these appear in the future. They should not be taken from a foreign language, as in medical science, since esoteric features would tend to diminish popular appreciation and interest; neither should they be words in common use. A term recently introduced which seems to meet the requirements here specified is retardation.

2. One of the most effective means that could be employed in formulating a scientific nomenclature is the sharp analysis of complexes into elements, for by this process distinctions are brought into clear relief. The chief value of this analysis, however, for the purposes of scientific method is its service in laying bare the heart of a situation and revealing relationships. It puts the trained mind in a position to distinguish essential from non-essential factors. In much of our educational thought and practise of the past we have been dealing with cumbersome complexes. We have been using the direct method of exerting blind and brute force, as it were, rather than the indirect method of applying a small force at the crucial point in a situation. We have long been educating children and youth *en masse,* for example, according to a tolerably uniform standard, chiefly because that is the way our ancestors educated children, and are just beginning to realize fully that the pupils in a given grade thruout a large city or a state represent a wonderful diversity of potentialities and vocational destinations. The discussion and agitation of the problem of teachers' wages in its various aspects, which has absorbed so much attention in the past decade, has very often been characterized by ridiculous absurdities, owing to the want of a clear analysis of the complex of economic forces and factors involved. Again school men have long been aware of the rapid and consistent decrease in the number of pupils in the different grades from the beginning classes thru the successive grades to the high school and college, but they have been utterly unable to cope with the situation because of the same lack of analysis with its correlated insight. In recent years there has been some really scientific analysis of this dis-

turbing complex, and a flood of light has been shed upon some important aspects of it.

Here again it must be frankly admitted that possibilities are limited. Educators are forced to deal with situations both in theory and practise which can not be satisfactorily analyzed at the present time. The plea here made, however, is for the analysis of analyzable situations, and by this means the way will be broken for the successful attack of more complicated ones. The three complexes just mentioned, and numerous others, can all be broken up by means of appropriate devices. We do not measure up to the opportunities within reach.

3. The fruits of careful observation and experimentation (which two functions are here understood to include comparison) are the materials out of which sciences are built. Of these two processes, education is obliged to place a relatively large emphasis upon the former. This is true because experimentation in education means experimentation upon human beings, the possibilities of which are of course distinctly limited. The sciences of which man is the subject-matter are placed at a great disadvantage in this respect as compared with the physical and biological sciences. And among the sciences of man, the mental sciences, with which on the whole we must class education, are in a peculiarly disadvantageous situation as compared with the sciences of physical man. Owing to the emphasis placed by natural selection upon the nervous system, man's physical organism corresponds much more closely with those of lower animals than does his mind. Thus much material for human physiology, pathology, etc., can be obtained by experimentation upon animals, but this is not true in education. A useful comparison is here suggested between the professions of medicine and education.

However, the field of observation in education has been worked thus far only in a more or less random and desultory fashion. There are rich possibilities yet unappropriated. It must be remembered that observation includes not only the inspection of existing conditions as they are, but also the collection of systematic data with reference thereto. The

late contributions to our knowledge of elimination and retardation and their causes were made possible only by the prior collection of accurate data. Many important relationships in education could be more or less convincingly established by the use of sufficiently accurate and extensive data which it is not beyond the range of possibility to collect. Among these are the relations between health and school efficiency, sex and different school abilities, vocational training and school attendance, and success in school and success in life. Moreover, the possibilities in the way of experimentation in education are not so meager as one might suppose. Experimental schools which are not merely practise schools are being developed along liberal lines in connection with schools and colleges of education. It would be a hazardous venture to enter into detailed specifications here, but the writer may perhaps express a belief that unsuspected possibilities await development in the field of educational experimentation.

The factor of scientific method just now under consideration is perhaps the weakest one in education, as in certain other social sciences. The cause is not far to seek. The collection of data sufficiently exact and comprehensive to meet the demands of scientific research, and the prosecution of elaborate scientific experiments, are very costly proceedings. They are enterprises which private initiative can not successfully undertake for the simple reason that they are not profitable, however useful the results. Useful inventions which can be embodied in material forms are profitable, because they can be patented and their use fully controlled; but inventions in the form of discoveries of truth can not be monopolized to anything like the same extent, despite the privileges of copyright. The channels thru which items of information may circulate are a hundredfold more numerous and facile than those available for material bodies. Moreover, copyright articles find their way with extreme readiness into great clearing houses of information, like colleges and libraries. Even the inventor of a useful process or method in industry which can not itself be embodied in material form can reap comparatively little advantage from it unless it is possible to keep it secret. The

lesson to be drawn here is that, since society thus unavoidably appropriates the useful results of scientific research without compensation, society should and must bear the burden of such research, take it in charge, and systematically disseminate the results. This is precisely what the people of the United States are doing at the present time to a limited extent thru the Department of Agriculture and certain government bureaus. Private philanthropy is beginning to recognize the situation suggested, and the Bureau of Municipal Research of New York City, the Russell Sage Foundation, and the Carnegie Institute are examples of institutions for scientific research established by this agency. In few fields are there greater need and greater opportunities for bureaus of research than in that of education. Efficient education is a far more potent instrument in combating social evils than efficient charity. Bureaus of educational research should be established at public expense. Public money could not be more profitably invested in education at the present time than in this direction. The objection that we can not afford increased expenditures for education is almost impudent. The value of the liquor consumed in the United States per annum is treble the amount spent for education of all forms.

4. The extent to which the quantitative method can be applied in ascertaining educational facts varies exceedingly. There are certain quantities, such as ideals, which it would be foolish to attempt to measure, and there are numerous others, such as attendance and expenditures, which can be measured with all needful exactitude. Ranging between these extremes are quantities of all degrees of amenability to mathematical treatment. The measurement of quantities of given importance near the one end of the scale is attended with such difficulty, and the figures are so inexact, that the returns do not justify the outlay. The results for quantities of like importance at the opposite end are obtained with such comparative ease and, tho not exact, are so nearly accurate that the measurement is abundantly worth while. It would be impossible to say just where the line should be drawn separating these two classes of quantities. However, it should certainly

be drawn much nearer the first named extreme than has actually been the case in practise. A large variety of important educational relationships and facts can be discovered thru the application of various statistical devices to proper data which it is not at all impossible to get. It is impracticable in many cases to secure the requisite data at the present time, it is true; but the impracticability will not endure forever. Society will some day resolve that a proper portion of its abundant resources shall be utilized for the wresting of secrets from nature by the possession of which the common good and the joys of life can be greatly advanced. There are, moreover, numerous important numerical relations and facts which are quite determinable by cities, counties, and states for local educational purposes, and which are worth determination at intervals of from one to ten or more years. Yet few of the localities named make any approach to a full realization of the profitable achievements within their power along this line. Important quantitative facts determined by some are never determined by others. Some such facts, the number of pupils actually beginning school in a given year, for example, are very rarely determined at all, judging from published reports. The extraordinary paucity of measurements of this simple quantity has been a source of much difficulty and annoyance in the studies of elimination and retardation previously referred to. The matter could be much improved in most cases by the exercise of greater economy. No locality prepares wholly useless material, but a large proportion of the statistics and other matter that are regularly published in annual or biennial reports are certainly not worth determination and publication so frequently. A far more economical policy would be to increase the range and exactness of facts and decrease the frequency of determination.

There are many good people in educational work who throw up their hands in horror at the thought of the domination of the quantitative ideal in education. They feel that this would be grossly materialistic and would violate the dignity and sacredness of childhood. Such sentiments are unscientific, as nothing less than the choice between exact and inexact in-

formation is here involved. They rest in a considerable degree upon a certain misapprehension of the relation between quantitative or mathematical method and qualitative or descriptive method. The distinction between the two is entirely relative, not absolute. Qualities are merely a particular class of quantities. They vary in amount the same as money, or what not; goodness, for example, may be more or less. It is impossible to draw a hard and fast line between quantities in the ordinary narrow sense and qualities. Are length and weight qualities or quantities? Force is not matter, yet is it capable of accurate measurement? Is it a quality or a quantity? If force is a quantity, what about mental ability? Matter or mass is probably the only thing which all would agree is never a quality. Tho certain things capable of exact measurement are qualities by common consent, such as temperature, the chief mark of distinction between the two classes in ordinary usage is susceptibility to mathematical treatment, which is an extremely variable thing. But, apart from ordinary usage, it is certainly a correct view that quality is a species of the genus quantity. Now knowledge may be either mathematical or general, quantitative or qualitative; the one sort is exact, the other inexact. The basic distinction between the two types, however, does not lie in the presence or absences of ideas of amount, but in their definiteness. All merely descriptive language is full of vague and inexact terms of amount, and just to that extent its meaning is lacking in clearness and exactness. In view of all this, why should we have any horror of the quantitative method? The utility of truth varies directly with its exactness. Would it not be a distinct gain in education or any other field where effectiveness of action is dependent upon knowledge to substitute mathematical terms and ideas for descriptive ones, wherever possible? It would certainly not pay to spend very large sums in educational research if the results ascertained were exprest in merely descriptive terms. The refusal at the present day to adopt the quantitative method in education, to the limit of its advantageous serviceability, is the deliberate choice of a clumsy and

antiquated instrument where an efficient and modern one is available.

5. The crucial and vital step in scientific method is the drawing of conclusions from available data, the formulation of hypothesis and truth. This represents the point where the product is turned out. The reliability of any conclusion depends directly upon the character of the data; in other words, upon the evidence. Hence the various items of the product possess all degrees of reliability. The degree of credence accorded conclusions should, therefore, always bear a direct relation to the weight of evidence, since belief determines action with all its sacrifices and consequences. In proportion as belief is not so regulated, the believer in the long run is deluded and led astray; in so far his judgment is unsound. Unless we are willing to embrace the doctrine of innate ideas, we must grant that, barring chance, evidence is absolutely the only means of attaining truth the human mind has at its disposal. There are various kinds of evidence, of course, but this in no way invalidates the principle. Each kind has its value, slight tho it may be. Tradition and custom in and of themselves have little evidential value, while direct experience on the whole has a great deal. It follows as a corollary here that ability and care to weight available evidence properly are of supreme importance. The power and habit of doing so are gradually acquired thru practise and experience. This trait is simply a matter of good judgment. One of the difficulties in correctly weighting evidence is that disturbing element variously compounded of temperament, self-interest, the warp of experience, etc., known as the personal factor. It is a source of disturbance for the reason that it causes variations in the weighting of evidence in individual minds. Scientific method at its best always takes account of it by making due allowances.

Educational theory and practise have not been sufficiently controlled in the past by the principles of evidence, tho the situation is greatly improving today. Tradition and custom have dominated in education as in other spheres of human life. Many traditional beliefs and practises were doubtless prop-

erly based upon evidence in their origin, for the available evidence was comparatively scanty; but their continued acceptance after a large amount of additional experience had accumulated in the way of both additional evidence and additional skill in judging the same has been unjustifiable in a large proportion of cases. The stock illustration, of course, is the persistent dominance of the classical curriculum in secondary and higher education from an early period when it was largely utilitarian up to recent times. Tradition has been equally strong in determining the content of the elementary curriculum, the education of girls, the sex and other qualifications of teachers, school discipline, methods of teaching, and educational ends and ideals. A kind of ancestor worship has controlled educational procedure in many directions rather more than rational considerations. As above suggested, this has been partially excusable on the grounds of a less amount of evidence than we now have that other things were better and a less amount of accumulated experience in weighting evidence; but it has been more largely due to the want of a judicial and scientific attitude. The more important causes have been the personal factor and a careless disregard of certain kinds of available data. The established order not only suited the powers that were, but it was dear to the schoolmaster's heart; and rarely did any one ever think it was worth while to observe and study the significant conditions all about him. When action is demanded, adherence to tradition and custom is thoroly rational, if nothing better is offered; but the refusal to accept or seek evidence for better possibilities is inexcusable. Much of the improvement in education today is the result of reinterpreting or reweighting available evidence rather than the effect of new evidence. We should welcome reasonable criticism, both destructive and constructive, of educational theory and practise. Without the skeptic and the visionary there could be no progress, educational or other. It is true the freak is numbered among these, but so is the genius. Provided change continues by evolution and not by revolution, we have nothing to fear. In fact, revolutions in education as elsewhere may be peacefully achieved

in due time by the process of evolution. Such an educational revolution is now in progress.

6. The realm of man's systematic study and investigation may be conveniently marked off into three major fields, as follows:

First. A field of definite and concrete facts and things. The aims of endeavor here are (1) the systematic collection and classification of concrete facts about objects and phenomena, and (2) the establishment of such actual facts and principles as conclusively follow from them and all ordinary experience.

Second. A field of inference and theory about things of which, barring limitations of space and time, we are capable of having certain and direct experience. The aim here is the interpretation of inconclusive evidence touching matters about which the evidence is in a sense potentially conclusive. Problems of evolution, heredity, experience, and society exemplify the content of this field.

Third. A field of speculation about alleged existences which it is impossible for the human mind to experience certainly or directly. This is the field technically known as metaphysics. Evidence here is by no means altogether wanting, but it is purely inferential. From the very nature of man's psychophysical constitution it is not potentially conclusive.

The lines of demarcation separating these fields are not hard and fast, but the fields are tolerably clear. The first of the three belongs entirely within the sphere of science; the third belongs entirely within the sphere of philosophy. The second, however, is either science or philosophy, or both, according to the point of view taken. Thus the doctrine of evolution in the comprehensive sense may properly be considered either as natural science or natural philosophy, and theories of society are either social science or social philosophy.

The scientific method may be applied in research in any of the preceding fields, but its power to yield results varies very much in the different ones. Even in metaphysics the scientific method may be employed as opposed to that of unrestrained speculation, and the metaphysics of the late Dr.

Paulsen is an example of its use to a considerable extent in this field. However, the scientific method at its best, without ignoring any field, places a large emphasis upon the first field as compared with the second, and a very large emphasis as compared with the third. The first is the field of tangibility and certainty. As it is worked the frontiers of positive knowledge are pushed back, the territory of the second field is invaded and gradually appropriated, and new regions for ultimate conquest are brought into view. The scientific method fully recognizes that the race, like the child, must begin at the foot, and not at the top, if it is effectively to attack any body of problematic reality.

Now the tendency in educational theory in times past has been to begin at the top, as it were. An entirely too large proportion of time and energy has been expended upon various important problems which were more or less insoluble with the means at hand. In brief, educational theory has been dominated more or less by the claims of metaphysics, religion, and philosophy. This is made strikingly apparent by a survey of the history of education, which discloses nothing more clearly than the fact that our educational theorists have been very largely metaphysicians, theologians, and philosophers. Some of the insoluble matters which have been the subject of a vast amount of educational thought are the educational bearings of the problems of the self-activity of the soul, of the nature of individuality, of freedom versus determinism, of the nature of absolute reality, and of universal purpose or teleology. Others are problems of a much less metaphysical character, for the real solution of which the data have always been utterly insufficient. The importance of the issues involved in these problems is not for a moment denied; neither is it maintained that they should be ignored. It is maintained, however, that a large amount of emphasis should be shifted to the other end of the scale of educational problems. As the difficulties there located are disposed of one after another, the solution of greater problems will be gradually approached and accomplished. Greater light will ultimately be shed upon the philosophical problems of education

by this plan of procedure than by the old speculative method. These questions can never be solved by pure reason; yet some can be ultimately solved and all can be more or less illuminated by the empirical approach.

The observation of the suggestions here advanced would clearly obviate no small part of the difficulty experienced in the use of educational terminology. The many terms incapable of clear definition, which were previously noted, belong quite largely in the sphere of the philosophical aspects of education. The shift of emphasis above recommended would much diminish the occasion for their service.

III. THE SCIENCE OF EDUCATION

Educationists are inclined to be very much concerned at times over the question whether there is a science of education. They are like the sociologists in this respect. Debate on this point beyond a certain limit is unprofitable. The important thing to recognize is that there is a field of education, rich in possibilities, where the scientific method is entirely applicable. The question whether we have now reached the status of a science in education is of far less consequence than the question whether we are headed in that direction. If we are, the desired status will be attained in due time and the fact will be established beyond cavil or dispute. If, on the other hand, we are not scientific, what claim can we have to be classed among scientists? The second of the questions presented above must, of course, be answered in the affirmative at the present time, but the important qualification should be added that we are not headed so directly nor are we moving so rapidly in the proper direction as we might be. The chief difficulty in the way today is probably inadequacy of means, and, considering the facilities at our disposal, we are not doing so badly as an inconsiderate and relentless view would seem to indicate. This matter has been sufficiently discust already in another connection. Education, like medicine and engineering, is largely an applied science (or science to be). As it is the special business of an applied science to do, it very freely appropriates

the fruits of the scientific method in other fields. This makes it appear to be somewhat of a parasite upon other sciences, without an independent standing of its own. But all this is just as it should be. Medicine draws at will upon chemistry, physiology, and anatomy; engineering levies large tribute upon mathematics, physics, etc.; and education must do likewise. Education is primarily dependent upon three major sciences, the three comprehensive sciences of life and things living in the positivistic hierarchy; namely, biology, psychology, and sociology. These considerations, however, do not preclude the possibility of a pure science of education. Aside from the educational bearings of biology, psychology, and sociology, there is a fruitful field for scientific study where attention and interest are directly focused upon the thing *education*. This is the field where the productive work in education contended for in the preceding pages is expected chiefly to be done. The pure science of education and the educational bearings of all other sciences on the one hand, and educational needs and aims on the other, constitute the material with which the applied science of education has to do. This applied science has three major divisions; namely, the theoretical sides of educational administration, school supervision, and teaching methodology. In the actual application we have the art and profession of education and the scientific method in education in its secondary aspect.

The development of a true science of education does not mean the abolition of the philosophy of education. The writer is firmly convinced, as already suggested, that the latter has its place. The two, in fact, are partially one and the same. What is urged in this paper relative to this point is a radical readjustment of emphasis, which, in view of the trend of educational events in recent times, is really not so radical as it seems.

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VIII

WILLIAM TORREY HARRIS—THE MAN[1]

Today there is a vacancy in each heart here that ever came in close contact with the vigorous personality of William Torrey Harris, who died in his seventy-fourth year, November 5, 1909, at Providence, R. I. In my office his picture hangs on the wall, and, as I turn toward it, the eye and the lips seem ready to speak to me of things eternal. Somehow I feel, as I look upon his face pictured there, that this life is only earth's vestibule to a higher and a better one. It is the same calm face that said to me scarce two years ago: "I have now commenced the reading of Hegel's *Philosophy of history* for the seventeenth time, and I shall get more out of it at this reading than at any previous one." This simple statement is characteristic of his entire life, indicating energy, courage, and great tenacity of purpose, and forming a background of character as clear cut as polished steel. Handicapped, yet as housekeeper and cook, student and athlete, he emerged from Yale College after reaching his majority, and settled in St. Louis in 1857. Here he worked and studied for nearly a quarter of a century, becoming the greatest and sanest intellectual and educational force in this country, which has been lavish in its production of vigorous men and women. His personal experience was wide and deep among men and women of keen perceptions and strong convictions.

He possest ability of the very highest order, an intellectual energy that was tireless, and a physical constitution that could endure equal to Napoleon's. Thruout these years he studied the greatest thoughts of the greatest men that this earth had produced. In all his work he displayed the genius of industry,

[1] Paper read before the meeting of the National Education Association at Boston, July 5, 1910.

a keen insight, and a well balanced and unbiased judgment upon every subject that he investigated. His mind was titanic in its structure and modes of thought, and as he rose and past across the educational horizon of his native land, he cast a light that will shine undimmed down the ages. He always lookt for and sought the genesis of things. Whether with the microscope, the telescope, or the eye of reason, into whatever region of knowledge he penetrated, he always came back to man as that something which remained unchanged thru a changeable world,—a something that bound the life of the child, the adult, and the aged man into one continuous stream of purpose and action. In whatever region he turned his thoughts, he saw clearly beneath this fleeting phenomenon the permanent and the real,—the clear idea of the individual and of the absolute reason. His mission was not to startle men and women with new doctrines founded upon false or doubtful hypotheses, but to make clear to them the great truths that lie about us everywhere which are wholly or partially obscured. By pondering over the fundamental questions of existence, of institutions, of history, of the sciences, of art, of religion and philosophy, he would bring into the field of thinking that certainty which each has that he exists, and to know he is a rational being that feels and loves and aspires to satisfy yearnings yet unsatisfied.

William Torrey Harris was fortunate indeed when he chose in early manhood St. Louis for his home. His intellect there was unfettered by traditions that would have cramped his aspirations in some other localities. The society into which he flung himself was in a continual flux, not tied down between leading strings. For years he associated with a coterie of as profound and brilliant men and women as could be assembled elsewhere on this continent. This, too, was the era when some of the greatest thoughts in the scientific world were startling and challenging the attention of thinking men in Europe and in America. The doctrines of Kant, Laplace, Lagrange, Humboldt, and Lyell, were in some respects being replaced by those of Wallace, Darwin, Mayer, Huxley, Spencer, Baird, and others in the natural sciences; while Boole, Sir William Rowan

Hamilton, and other continental analysts, building mostly on the foundations of the great masters who had preceded, were making wonderful contributions to the department of pure and applied mathematics. Bold minds were pushing out into new and unexplored fields everywhere. Upon every hand was an undercurrent of feeling that in the physical universe, from the minutest particle to the largest sun in infinite space, law rules supreme; that every department of knowledge is subject to an unvarying uniformity in the organic and inorganic realms; nay, that all human institutions embracing the nations of the earth, formed no exception to the rule of the universality of law. While these schoolmasters of the race were formulating and giving to the world their theories, William Torrey Harris was studying most closely and analyzing and inventorying most patiently and accurately what these and others had done and were doing in their special fields of investigation, and, while believing most firmly in great underlying principles as the groundwork of everything permanent and valuable, he decided to do a similar kind of work in education for the unfoldment of human charatcer as Laplace, Lagrange, Gauss, Peirce, Boole, Sylvester, Cayley, and others had done for mathematics; what Humboldt, Lyell, Agassiz, Wallace, Darwin, Huxley, Spencer, and others had achieved in the organic and inorganic sciences; what Marshall, Story, Webster, Calhoun, Hayne, Wright, and Choate, guided by Hamilton, Madison, and Jay, had done in fixing the principles of constitutional government for the United States. It is true that Jefferson, Horace Mann, Bishop Potter, the elder Beecher, and Alexander Campbell in our own country had spoken powerfully in favor of education of the masses in order that a republican form of government might be saved from anarchy. But his sphere of work lay in another direction, that of critically interrogating human nature and human institutions, and then determining what factors in these are permanent and what ones transitory, and whether they could be brought within the realm of educational law as implicitly existing in man's thinking processes. Across the historic pages he saw that some men had cut deep channels in every part of the

world's history wherever men had combined to secure and maintain permanent possession of property within prescribed limits. All his investigations were confined to civilized races. Savages had no history anterior to civilization, and the wild man had no great attraction for him prior to the taming of his instincts in obedience to the civil and moral law. A scheme of education, however well devised, without a thoro knowledge of the persons to which it can be applied, would have only an abstract value. And all his reflections centered about established and well organized institutions, the home, the church, the school, and the state. As others studied plants and animals in the wild or domestic state, he studied man in civil society. Whatever line of research he undertook he brought the highest order of analysis and constructive ability to its investigation. Thus he stimulated others in their activities by virtue of his clear thinking and judicial attitude. His special work was to gather up and to arrange concrete phenomena under general laws, and to show how these included the highest results of human reason. By the most searching analysis, he separated complex phenomenons into their simplest elements and placed each where it belonged. Literally, he would pluck up a subject by its roots, and in the clearest sunshine examine each of its constituent elements and classify them one by one. In this respect his mind was one of the most searching and critical of any age. Whether dealing with abstractions or real things, he never wavered in his steadfast course. Having sounded the depths of knowledge with unerring line and plummet, he moved forward from premise to premise with a force as irresistible as fate. He built up his argument into a system out of which he formulated the laws of logical analysis and classification.

When he had past in review thru the first stage in knowing and entered upon the second, or the relativity of knowledge, he clearly perceived that any one science is only a bough of something else deeper down. Every science touches other sciences at numerous points of contact. He was preeminently a truth hunter who would know what a thing is and what it is not in order to know its history and its destiny. His materialistic problem was to convert the forces of the world into such

forms that man could handle them. His spiritual problem was freedom and immortality of the soul, guided by highly specialized intelligence. The ablest living advocate of the freedom of the human will as opposed to a consciousless mechanism, he recognized for each the privilege of making the most of himself as an independent and self-centered personality. It was only a step then to the achievement in the realm of matter and mind as man's special prerogative.

By looking steadfastly at institutions he saw their significance in the systems of administration and jurisprudence which safe-guarded property, conferred personal rights and privileges, and enforced contracts. There could be no higher degree of intelligence developed above that of the uncivilized tribes, unless these rights and duties were enforced. Man can be elevated only thru a good system of religion, a good system of morals, and a good system of politics. Physical causes produce physical effects, and intellectual and moral causes produce their corresponding effects. These principles being deeply imbedded in the universal consciousness of mankind, he longed to see humanity not living in the basement, but on the first, second, and third floors. History had taught him the great lesson that in the stream of life men are sifted and sorted, the few to rise, the majority to sink into a dead level; but the hope of the world was in the elevation of the masses, guided by intelligent leadership in the active practise of the highest forms of moral and civic virtues. Because men succeeded by honorable means in great undertakings, he did not regard their successes as crimes against humanity.

The most important of the world's work, as he saw it, was to elevate the natural instincts of man thru the appointed channels of civilization by reducing his habits of thoughts and actions to a reasoned system of rights, duties, and obligations, and among these he recognized duties, customs, and actions as of pre-eminent worth in the formation of character.

In education he dug down into the neglected and forgotten elements to find a sure foundation upon which to build. In this search he brought to light the "five windows of the soul" thru which the different kinds of knowledge reach the mind and

are systematized by it. A human being thus became of infinitely more value than the mere animal which turns what it lives on into a manufactured article for man's consumption. The silent forces of life, working like the molecular forces in the department of physics, are the most powerful in the shaping of character. Education, character, life itself, all combined, are properly classed as a growth purposefully developed, and learning is also a process of continuous growth.

His outward speech was the expression of his inward thoughts and feelings which had been maturely considered before utterance. Whether he followed Plato, Aristotle, Thomas Aquinas, Edwards, Kant, Hegel, Hamilton, John Stuart Mill, or Herbert Spencer, he would classify all their thoughts by the three phases of knowing which he had discovered and elucidated, and then further test the conclusions each had reached by an application of the valid and invalid modes of the syllogism. Back of the syllogistic forms he instituted a critical investigation as to why the modes of the figures are arranged in definite orders. Starting with the conclusion that grammar shows the logical structure of language, and that language reveals the structure of reason, and that all speech takes the form of a judgment, he ascertained that the mind acts in conformity to the syllogistic modes in a specific manner when interpreting sensuous ideas, abstract ideas, or ideas of the absolute. Even the mind itself, unless unhinged, works according to law.

So far as I know he was the first who analyzed the different figures of the syllogism for the purpose of showing what kind of knowledge each represents and how it is arranged. He demonstrated how, in sense-perception, which is a low grade of thinking, that the mind "uses the second, first, and third figures; in the handling of abstract ideas, the third, first, and second figures, and in the absolute idea, it uses the third figure." From a critical examination he was led to inquire,—what significance have the syllogistic figures in psychology? This clue was no doubt derived from Hegel, who was the first to point out that each form of life had a corresponding "syllogistic structure, and likewise the inorganic world is correspondingly

dominated." A deeper meaning is implicitly involved in the figured syllogisms as not only furnishing rules for testing thoughts, but how the mind unconsciously thinks its thoughts according to the principles involved in the very structure of the syllogism. His special interpretation and application of the syllogism revealed to thinkers a deeper meaning in the logic of thought as to its background than any others had ever discovered, and of which only Hegel and Everett had caught glimpses. Once in this field and seeing how fruitful it was, it was an easy step to take up each of the subjects that entered into the curriculums of the elementary school, the high school, and the college, and to determine its bearing on all the other departments of learning, and to map out the special sphere of each. Thus, it is evident, how this mental procedure gave rise to his famous expression, " the five windows of the soul."

From his reflections on the dominant ideas composing each of the branches pursued in the elementary schools, the secondary schools, and the colleges, he perceived how they naturally fell into five coordinate groups, and that each group ought to be represented in each year's work thruout these continuous courses. His chief contribution to the philosophy of education lies in this classification in which is demonstrated what categories of the mind are actually employed in pursuing any one of these groups of studies.

It is thru mathematics as an instrument that a tool is furnished for dealing with bodies and their various kinds of motion in time and space. Mathematics thus enables man to command nature in its quantitative aspect. As powerful as this solvent is, it has its limitations. Its realm, however much extended and symbolized in measuring space, time, matter, force, and energies, can not be applied to any considerable extent to the processes of organic life. While one may study the mechanical action of forces as manifested in the plant, even here everything quantitative and mathematical is of a different form from that of the life principle itself. There is a biological something in the plant or the animal which determines it to follow after its kind. All the mechanical forces, such as

light, heat, electricity, and gravitation, are best studied and comprehended from the standpoint of mathematics. Yet thought, in its practical aspects as well as in its deeper phases, will be static, dynamic, or a combination, just as human minds may be fixt, fluid, or plastic.

Rising out of the inorganic world which presupposes the organic, the second includes all the studies relative to plants and animals,—the growth of material for food, clothing, shelter, transportation, and culture. This internal principle in inorganic nature builds for itself from the surrounding material a structure in which to dwell. The animal uses the inorganic and organic substances drawing from its surroundings salts and acids, and, thru its instrumentalities, converting vegetable substances into tissue by the use of heat, light, and electricity. It is a striving to express itself after its own form.

This life process is not mathematical, neither is it mechanically moved by a force without or within. There is a formative principle which is the prime mover and modifier that mysteriously builds up the organic structure. It is true that at many points these two phases, the inorganic and the organic, overlap, nevertheless they exhaust the field of nature. They include two vast areas of science, pure and abstract, in their wide applications, and some have gone so far as to make them include all knowledge. From a few fundamental conceptions pure and applied mathematics have been built up into one of the most comprehensive and far-reaching systems that the mind of man has yet constructed. Yet there are vast fields where it is utterly helpless as an efficient agent. Neither can the most skilful biologists apply the methods of their department to outside spheres. Projected in bold relief, Dr. Harris showed what instruments, as tools, man employs to comprehend the inorganic and the organic kingdoms in standard terms of his own thinking.

The significance of his discoveries and classifications was not fully recognized or comprehended while he was among us. Had it been, a great deal of fruitless effort and senseless experimentation on the children would have been avoided. He formulated new and safe lines of pedagogical procedure which

are rational. Unwittingly would-be reformers often stumble into bottomless pits. To cause leaders of educational thought to consider the whence and the whither of what they were doing, was his object in speaking to the educators of the world. He was a conspicuously clear and safe leader in educational philosophy. He had worked thru each subject and determined its bearings on the life of the citizen in a free government under the conditions of time and opportunity. Under his conception the world for helpful cooperative purposes was growing very small, and he was writing on the world's blackboard for all time. As he often exprest it:—"We can afford to wait." His instincts were always centered on the eternal verities in each subject. The superficial he never tolerated, and passing popular bursts of educational reformation had no charm for him any more than red-handed anarchy as a substitute for constitutional government. His earliest training had been to look at all things straight in the face, and to see what they contained. To bring truth to light among men was his mission, and this he did in many ways. When the entire country went wild on supplementary reading in the elementary schools, he called attention to the great value of strong, short literary unities for young and growing minds; these selections were to be taken from a large list of the choicest authors and thru a careful study of them the learner's mind would be influenced by noble thoughts and enriched by a select and extensive vocabulary.

The universal cry from the secondary schools, colleges, and universities in regard to the chaotic conditions of teaching English and the woeful results now obtained, are mainly traceable to methods and their tendencies which he clearly foresaw twenty years ago and pointed out. He saw the need of something logical and eternal in the elementary schools.

Under the influences of superficial science teaching in many high places and in magazines and the daily press, he saw that a mechanical explanation of the world is a system of mere surface thinking which was making deep inroads on religious faith in the unseen. A mind so constituted as his was, analytical, critical, constructive, and with a steadfast belief in human re-

sponsibilities, and that the soul would live hereafter, would naturally view with deep apprehension the undermining of the Christian faith and the loosening of the unseen foundations of society. To combat the agnostic influences at work in society, he studied most diligently the church fathers, Dante, Christian art and hymns, fate and freedom, and all phases of materialistic and spiritual philosophy, and in his lectures on the Christian religion and its necessity to humanity, he was the ablest defender that appeared on the platform during the last quarter of a century. He met the scoffer on his chosen field, and there answered him most completely. In thus speaking of him in this connection, I class him with Professor C. C. Everett and Professor Borden Bowne; these three, as I estimate ability, were the clearest and ablest and sanest thinkers in this special department our country has yet produced.

To his other qualifications Dr. Harris was one of the most philosophic and artistic interpreters of music, literature, sculpture, painting, and architecture that either Europe or America has produced. These were all expressions indicating the height and the depth of the aspirations of the human soul in endeavoring to transcend the world of sensuous impressions. They were means of conveying to humanity what man strives to accomplish and to transmit his thought and feelings to the oncoming waves of future generations. Only the few who came in close personal contact with him knew the riches of his wonderful mind or the sweet, persuasive influence of his nature. On another occasion I have drawn the curtain partly aside that others may catch some glimpses of him as a few knew him.

He shed a steady and clear light on every question that he ever presented to the National Education Association. His contributions covered the most diversified fields of thought. He was equally at home in all. Undoubtedly he was the best informed all-round citizen of this country. For more than sixty-five years he had been a learner and a thinker. In far-reaching constructive statesmanship, he would have ranked with the very ablest in Europe or in America. As an interpreter of history, political institutions, of the civil and moral law, and of sociological, economic, and social conditions, he

was unexcelled even by those who are specialists each in his own chosen field. But in the realm of psychology, philosophy, and logic in their bearing on systems of education, he stood head and shoulders above all others on this continent if not in the world. He was the many-sided scholar, philosopher, and educator, great in the simplicity of his character.

Little appreciated while here among us, yet the living and those that come after us will turn more frequently to his published addresses as sources of information, of inspiration, and of wisdom than to those of any other of America's great educators and philosophers. His rank is among the world's greatest men, and his statue should be placed in the " Hall of Fame " in our national capitol as America's greatest contribution to scholarship, education, and philosophy.

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IX

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"Dr. Brann has done his work so well that American college alumni will be prouder than ever of their alma mater. . . . The story of the foundation, the development, the growth and progress of the institution is interesting not only to its past and present students, but to all Catholics."—American Catholic quarterly review, April 1910, p. 373.

Brown, Elmer Ellsworth. The use of reference books. *In* Appleton's new practical cyclopedia. New York, D. Appleton and company, 1910. Volume I, p. v-xi.

Budde, Gerhard. Die pädagogik der preussischen höheren knabenschulen unter dem einflusse der pädagogischen zeitströmungen vom anfang des 19. jahrhunderts bis auf die gegenwart. Langensalza, Hermann Beyer & söhne, 1910. 2v. 8°.

Carnegie foundation for the advancement of teaching. Medical education in the United States and Canada; a report to the Carnegie foundation for the advancement of teaching, by Abraham Flexner, with an introduction by Henry S. Pritchett, president of the Foundation. New York city [1910] xvii, 346p. 4°. (*Its* Bulletin, no. 4)

[1] Compiled by John D. Wolcott, Acting Librarian of the United States Bureau of Education, to which books and pamphlets should be sent for inclusion in this record.

"Likely to do good service in attracting attention to the low standards and inadequate endowment of many of the medical schools of the United States. On behalf of the foundation, Mr. Abraham Flexner has visited every one of the 155 medical schools, and gives a brief description of each. The conditions in each state are summarized, and plans are proposed for their improvement."—Popular science monthly, July 1910, p. 101.

Colgrove, Chauncey Peter. The teacher and the school. New York, C. Scribner's sons, 1910. xxi, 406p. 12°.

"Every aspect of the teacher's work is discussed with a thoroughness of knowledge, a grasp, a sanity, and a careful weighing of values that is as rare as it is helpful."—Journal of education, July 21, 1910, p. 77.

Dewey, John. How we think. Boston, D. C. Heath & co., 1910. vi, 224p. 12°.

The author believes that the native and unspoiled attitude of childhood, marked by ardent curiosity, fertile imagination, and love of experimental inquiry, is very near to the attitude of the scientific mind, and that a recognition of this fact in educational practice will make for individual happiness and the reduction of social waste.

Diaz, Raul B. Viaje á los Estados Unidos de América; notas sobre educación. Buenos Aires, Establecimiento tipográfico El comercio, 1909. 263p. illus. 8°.

Draper, Andrew Sloan. Agriculture and its educational needs. Syracuse, N. Y., C. W. Bardeen, 190[9?] 92p. 12°.

"Commissioner Draper is leading off in the utilization of the schools for agricultural progress. He makes a strong plea for keeping the country boy at home by making farm work intelligent, pleasant, and profitable."—Journal of education, June 23, 1910, p. 728.

Farrington, Frederic Ernest. French secondary schools; an account of the origin, development and present organization of secondary education in France. New York [etc.] Longmans, Green, and co., 1910. xii, 450p. 8°.

Bibliography: p. [411]-430.
"By far the best account of the French secondary schools that has appeared. Its information is so adequate and reliable as to make it a 'source book' for students of education. It is at the same time so personal in its setting as to be entertaining in its descriptions as few educational books are. Its highest value, however, is the fact that it is a comparative study of secondary schools, notably of America and France."—Journal of education, June 2, 1910, p. 610.

Franklin, Fabian. Life of Daniel Coit Gilman. New York, Dodd, Mead and company, 1910. 446p. 8°.

"Dr Franklin has set forth with admirable orderliness and lucidity the chief activities of a varied and complicated life, and his book will be necessary not only to admirers of the hero but also to all students of higher education in America."—Nation, June 2, 1910, p. 557.

Gilchrist, Beth Bradford. The life of Mary Lyon. Boston and New York, Houghton Mifflin company, 1910. x, 462p. 8°.

"A biography to place beside that of Alice Freeman Palmer; the same intelligent zeal and loving sympathy have gone to the making of both."—Dial, May 16, 1910, p. 349.

Gillette, John Morris. Vocational education. New York, Cincinnati [etc.] American book company [1910] vii, 303p. 12°.

"The writer of these chapters has endeavored to discover the requirements of the world in which we live and has called upon his fellow teachers to respond to the call. He makes very much of vocational education. . . . There are many propositions in these chapters which

cannot be altogether approved without further and critical consideration; but the survey is broad, the issues are living, and the contact with reality is beyond question."—Charles Richmond Henderson in Introduction.

Greene, Maria Louise. Among school gardens. New York, Charities publication committee, 1910. xv, 388p. 8°.

Bibliography: p. [341]-375.
"The purpose of the book is admirably carried out. The descriptions of the different kinds of gardens, from the gardens of the district schools to those of the city schools, are full and suggestive. . . . The list of reference books is very complete."—Playground, June 1910, p. 113-114.

Hart, Joseph Kinmont. A critical study of current theories of moral education. Chicago, The University of Chicago press, 1910. 48p. 8°.

Heubaum, Alfred. J. Heinr. Pestalozzi. Berlin, Reuther & Reichard, 1910. 368p. 8° (Die grossen erzieher; ihre persönlichkeit und ihre systeme. Bd. 3)

Höfler, Alois. Didaktik des mathematischen unterrichts. Leipzig & Berlin, B. G. Teubner, 1910. xviii, 509p. 8° (Didaktische handbücher für den realistischen unterricht an höheren schulen. Bd. 1)

Jordan, David Starr. The care and culture of men. Frontispiece by F. Soulé Campbell. San Francisco, Whitaker & Ray-Wiggin co., 1910. 194p. 8°.

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Selected bibliography on industrial education: p. 116-123.

National society for the promotion of industrial education. Report of the Committee of ten on the relation of industrial training to the general system of education in the United States. New York city, National society for the promotion of industrial education [1910] 16p. 8°.

Includes Preliminary report of the committee of ten, H. S. Pritchett, chairman, submitted at the second annual meeting of the Society, Nov. 19-21, 1908, and Final report, submitted at the third annual meeting, Dec. 2-4, 1909.

Perry, Arthur Cecil, *jr.* Problems of the elementary school. New York, Chicago, D. Appleton and Company, 1910. vii, 223, [1]p. illus. 12°.

Snow, T. C. How to save Greek and other paradoxes of Oxford reform. Oxford, B. H. Blackwell, 1910. 86p. 12°.

"Mr. Snow's plan for encouraging Greek is to demand a great deal more reading of the texts and hardly any grammar and composition. . . . He desires to open the university to classes that have hitherto been excluded, and he throws overboard with a fine scorn the snobbish ideal, so widespread in England, that the two great universities exist primarily in order to provide a 'class-stamp.' "—Evening post, New York, May 10, 1910.

Strachan, Grace Charlotte. Equal pay for equal work; the story of the struggle for justice being made by the women teachers of the city of New York. New York, B. F. Buck & company, 1910. 570p. illus. 8°.

X

DISCUSSIONS

VARIATIONS IN GRAMMATICAL NOMENCLATURE

The article by Mr. C. R. Rounds, in the June issue of the EDUCATIONAL REVIEW, exposes an evil that amounts to a scandal. The mass of new objects and ideas which confront the awakening intellect of a child is bewildering enough at best. When the schoolmaster deliberately invents pitfalls for unwary feet he sins against childhood. About one-half of the difficulties of grammar would disappear if we had a uniform terminology. When two teachers, trained in different institutions and textbooks, undertake to discuss grammatical subjects, they are almost as badly off as if each spoke a language unknown to the other. So serious is the jargon of tongues in grammatical language that one finds it difficult to examine a class in grammar fairly without first finding out what book the children use and then framing the questions accordingly. The table of Mr. Rounds shows that in a company of twenty-two grammarians the same thing is called by sixteen different names. The author of a grammar does not hold himself bound to employ a recognized set of terms, such as we find, for instance, in mathematics, but freely invents terms, or uses familiar terms in unfamiliar ways. One pupil is taught to call *is* a "neuter" verb. Another pupil never heard "neuter" applied to anything but gender. A teacher familiar with Kerl's grammar only could not possibly understand what Brown means by an "attribute." English is not a grammarless tongue, as Richard Grant White would have us believe; but the grammar of English is relatively a simple matter. The difficulties are largely artificial creations.

The remedy proposed by Mr. Rounds seems perfectly feasible. The National Education Association has shown that it

is capable of exercising wide influence. It is the most potent unifying force in education we have in America. It would be but poetic justice to require some service in behalf of grammar from this body; for, thru its Committee of Ten, it discredited grammar as a school study, and is thus largely responsible for the low estate of the subject today.

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TEXTBOOKS IN THE PROFESSIONAL BRANCHES

The writer is a rather firm believer in the textbook method of instruction for students of high school and college grade. His experience both as a student and an instructor has biased him pretty thoroly against the mere lecture method, even when supplemented by suggestions for reading. Reading references, at any rate, are of little avail unless they are made specific, and unless abstracts of the readings are required and critically examined, or examinations or other tests on the reading are regularly held. The main thing in the teaching of pedagogy is to place the student in possession of a fairly consistent system of educational doctrine which will serve as a point of departure for subsequent studies, and as a norm in the practical work of teaching. Such a system is not likely to be mastered (at least in the present state of pedagogical science) by miscellaneous reading supplementary to oral lectures.

Important, therefore, as textbooks become in conducting courses in education, the selection of appropriate texts is by no means an easy task, the literature being large and frequently uncritical to the last degree, and the books on the various branches of the subject overlapping each other in a thoroly confusing way. It is with the hope of aiding the young teacher in the selection of appropriate texts for classroom purposes, and for purposes of a limited reference library, that the present paper has been written.

The writer has sought, in the selection of texts for his own courses in education, to keep two considerations con-

stantly in view: (1) to use only the best modern books, the needs and the grade of advancement of the students being kept in mind, as well as the merit of the texts considered from an objectively scientific point of view, and (2) to choose the books with reference to each other: *i.e.,* in such a way that the various texts and courses will, so far as possible, supplement and support each other, without unduly overlapping, so that the course as a whole will be an organic unit, affording a comprehensive view of the entire subject in its various aspects, historical, theoretical, and practical, as well as laying a thoro foundation for the same by grounding the student in biology, physiology, logic, ethics, and other foundational branches. Such groundwork will either have to be required as a prerequisite, or else furnished by the department of education itself. This is an ambitious program, to be sure, but it must be either this or nothing. Certainly, a mere empirical knowledge of the science of education is of comparatively small value, and may conceivably be worse than no training at all, resulting in a dilettantism which has been the bane of so much of the pedagogical training to which we have been accustomed.

A satisfactory book in the history of education, comparable to works in other branches of historical science, has yet to be written. Among the books available at the present time, Monroe's *Textbook in the history of education* is perhaps the least bad. Supplemented by source materials from the same author's *Sourcebook for the Greek and Roman period,* and by such monographs as are available in the form of educational classics for the modern period, the course can be made a fairly satisfactory one. Olin's *Outline in history of education,* and Taylor's *Syllabus,* which contain topical outlines and specific references to the older books on the history of education, would perhaps be more useful to the average teacher than some of the more ambitious bibliographies.

In philosophy of education, I have found Bagley's *Educative process* by all odds the best one book on the market. It should likely be preceded by some reading in psychology and logic (convenient texts for this purpose are Titchener, *A Primer of psychology,* and Creighton, *An introductory logic*),

and followed by some text which would do fuller justice to the more general aspects of the subject, for which Butler, *The meaning of education,* essays one and two, and O'Shea, *Education as adjustment,* are well adapted. It is to be regretted that a book so comprehensive and so meritorious in many respects as Horne's *Philosophy of education* should be marred by an artificiality and affectation which make the book pall on the student before the completion of a single reading. Unpleasant after-effects, however, may be avoided, I find, by administering in broken doses. If philosophy of education is defined in a broad way as simply theory of education or principles of education—*i.e.,* so as to include the foundational branches of biology, physiology, and psychology, as well as education proper,—a large number of useful books immediately suggest themselves. A few of these, which might be placed on a reference list, follow. On the biological aspects of education: Weismann, *Germ plasm;* Weismann, *Essays upon heredity;* Darwin, *Descent of man;* Cope, *Primary factors of evolution;* Brooks, *Foundations of zoology;* Marshall, *Vertebrate embryology;* Tyler, *Growth and education* (the last makes an excellent text); Guyau, *Education and heredity.* The following are on the physiological aspect of education: Huxley, *Lessons in elementary physiology;* Donaldson, *Growth of the brain;* Barker, *The nervous system;* Halleck, *Education of the central nervous system;* Spencer, *Education* (in part); Warner, *The study of children;* Mosso, *Fatigue;* Kotelmann, *School hygiene;* Shaw, *School hygiene;* Rowe, *The physical nature of the child.* The next list is mainly on educational psychology, and is the most important of all. Good books here are: James, *Talks to teachers on psychology* (perhaps the most interesting and best book available); Sully, *Teacher's handbook on psychology;* Morgan, *Psychology for teachers;* Lange, *Apperception;* Gordy, *The new psychology;* Aiken, *Methods of mind training;* Miller, *The psychology of thinking;* Swift, *Mind in the making;* Kirkpatrick, *Fundamentals of child study;* Adams, *Herbartian psychology applied to teaching;* Judd, *Genetic psychology;* Stratton, *Experimental psychology and culture;*

Thorndike, *Educational psychology;* Thorndike, *Elements of psychology* (to be used with the same author's *Principles of teaching*); King, *Psychology of child development;* Sully, *Studies of childhood;* Harris, *Psychologic foundations of education;* Preyer, *Mental development of the child;* Horne, *Psychological principles of education,* and Münsterberg, *The teacher.* The last list under this head is general in character: Rosenkranz, *Philosophy of education;* O'Shea, *Dynamic factors in education;* Dutton, *Social phases of education;* Hanus, *A modern school;* Hanus, *Educational aims and educational values;* Eliot, *Educational reform;* Herbart, *Science of education;* Bain, *Education as a science;* De Garmo, *Interest and education;* De Garmo, *Principles of secondary education;* Hall, *Youth;* Hall, *Adolescence* (a monument of erudition, but likely to produce digestive disturbances in students accustomed to a more attenuated mental diet); Mac Cunn, *The Making of character* (a splendid book, of literary merit, as well as scholarly); Dewey, *The school and society;* Palmer, *The new education;* Fitch, *Educational aims and methods.* The interesting series of Riverside Educational Monographs, published by Houghton Mifflin, should also be included in this list.

The subject of methods of teaching need not detain us long. A course in so-called general method has, to my mind, little value. All the teacher can do here is to put the student in possession of the fundamental principles of mental development, which can best be done in the courses in general and education psychology, and in philosophy of education. Beyond that, the work in method, if it is to be worth much, must be in special methods, in which, fortunately, a large and excellent literature is available. The American Teachers' Professional Library, published by the Macmillan Company, and the series of special methods for the lower grades, also by the Macmillans, cover the ground admirably both in the common and the secondary branches. Fitch, *Lectures on teaching,* remains one of the best of the older books on general method.

A few titles on school supervision, administration, and management must conclude this paper. On these subjects,

a valuable literature has appeared within the last few years, such as Dutton, *Administration of public education in the United States* (best used for reference purposes); Chancellor, *Our schools;* Brown, *The American high school;* Dutton, *School management,* and Bagley, *Classroom management.* The latter is a good text, and contains specific topical references to the older books.

If a definite selection from these various texts is wanted for a course in education which is to be both elementary and comprehensive, I can do no better than give the books I have selected for use in my own courses in Washburn College, in the three fundamental branches—history of education, theory of education, and applied education. Preliminary work in general biology, physiology, and psychology is assumed. Then the student takes the following, about in the order mentioned: *History of education,* Monroe, *Textbook,* with supplementary reading in the older texts and in the sources; *Philosophy of education,* Bagley, *The educative process,* followed by O'Shea, *Education as adjustment,* or Horne, *Philosophy of education.* The first two chapters in Butler, *Meaning of education,* and Tyler, *Growth and education,* might also be read. *Methods of teaching,* Thorndike, *Principles of teaching,* but preferably a number of courses in special methods, with literature mentioned above. *School management* (including administration, supervision, and management proper), Dutton and Snedden, *Administration of education in the United States,* or Chancellor, *Our schools,* followed by Bagley, *Classroom management.*

It is needless to say that the above lists do not claim to be exhaustive, and that many good books have doubtless been omitted. That will, however, not keep them from being suggestive to the comparative layman in the field of education who may welcome such suggestive lists. The professional student of education can, of course, construct a better list for himself, and he is kindly requested to treat the lists mentioned here as non-existent.

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THE MERIT SYSTEM OF RATING AND RE-RATING TEACHERS IN THE CITY OF BOSTON

Above the entrance to the exhibit of the Boston public schools, in a recent Exposition, these words were written so that "He who runs may read," "The highest development of a nation depends upon the highest development of each individual unit." A slight paraphrase of this sentiment applied to the school system of a great city might appropriately read: The highest development of a school system depends upon the highest possible development of each individual teacher therein.

Since the establishment of the federal merit system in appointments made in the civil service of the United States, there have not been lacking men who have proclaimed the utter uselessness of an attempt to regulate appointments to office by drawing from the top of a classified list names that have been placed thereon in accordance with a series of competitive examinations.

On the other hand, there is abundant testimony, not only of the feasibility of the merit plan, but absolute proof, if not of its complete success, at least of its increasing efficiency, and of its ultimate adoption in a widely expanded territory of application.

During the past three years, the appointments of teachers to permanent positions in the public schools of the city of Boston have been from a merit list. It is the purpose of this article to explain the process by which this list is made and the method of its administration.

The springs that feed the rivulets which unite to form the current of the merit system rise in the high schools where special preparation is given along lines of instruction that is deemed essential in the work of the normal school. The subjects required for admission to the normal school are definitely prescribed, and no substitutions therefor are allowed, thus a uniform preparation for the normal school is obtained. The plan of admission to the normal school is a combination of certificated and examined subjects. The Board of Superintendents grants certificates, on presentation of evidence of a

satisfactory standing, in seven subjects which are taken during the first three years in the high school, but all applicants for admission to the normal school must pass an examination, given by the Board of Superintendents, in at least five subjects in addition to those for which they may have been given certificates.

The benefits of this plan of admission are apparent in the improved quality of scholarship of the entering classes. Admissions have been screened so finely that a superior class of students is the result; and when it is considered that out of a total enrollment of over 100,000 pupils in the schools of the city, about 100, or one out of a thousand, enter the normal school annually, it will be recognized that the teacher in embryo is of selected material. At the close of the school year in June, 1909, the entire junior class of the normal school was promoted, a striking contrast to the twenty-five or thirty juniors who failed formerly of promotion.

In the normal school, the future teacher's professional training is begun, and in order to improve the training in preparation for teaching, and that a student who is in competition with other students may have every reasonable opportunity of making the most of herself, that all may be observed under conditions as like as possible, that judgment of students' work may be formed under uniform conditions, some changes were effected in the organization of the normal school.

Formerly, it was the practise to send both junior and senior classes into the different school districts thruout the city for observation and practise. They were visited and observed by one or more of the teachers of the normal school, but rarely, if ever, were they all observed by the same teacher. There was necessarily a lack of uniformity to some extent in the kind and scope of the criticism given by different teachers. To correct this difficulty, the Martin School, which is adjacent to the normal school, was organized as a model school, with a corps of teachers selected from all over the city at a moderately increased salary, and judged to be especially equipped, both by training and by temperament, for the peculiar duties demanded of a model instructor. Juniors from the normal

school now go to the model school for observation and practise. The principal of the model school is likewise a master in the normal school, an arrangement which makes for a continuity of plan, a concentration of energy and of effort on the part of the teachers in the two schools, and a corresponding unity of purpose and economy of time on the part of the junior pupils.

The senior pupils of the normal school spend twelve weeks in practise teaching in the various elementary schools of the city, in the classes of, and under the guidance of, certain excellent teachers known as training teachers. Instead of having, as formerly, the supervision of the senior pupils carried on by different teachers from the normal school corps, the entire work of their supervision was assigned to one person, a supervisor of practise, who was a former teacher at the normal school.

Thus, further, was the work of the supervision of normal school pupils organized, systematized, and standardized, effecting an increased efficiency all along the line of service.

After two years of preparation for teaching under the expert teachers of the normal school, the chosen teachers of the model school, and the training teachers thruout the city, together with the constructive criticism and sympathetic advice of the supervisor of practise, the normal school pupils are graduated, each ranked on a scale of points of which 900 is perfection. Of this 900 points, the maximum credit for scholarship is 700 points, and for teaching ability 200 points. The determining of this normal school rank is the primary rung in the merit ladder.

The graduates of the normal school are divided into two classes: The first, designated as "special," is composed of those who were college graduates previous to their entrance into the normal school; the second, designated as "Class B," is made up of non-college graduates. From these classes, a principal of an elementary school may select any one of the highest three, but his choice is not confined to the two classes mentioned above, as will be explained later. Approximately twenty per cent. of a class graduating from the normal school

in June receive permanent appointments by the middle of the following October. The remaining unappointed teachers are employed as special assistants, temporary teachers, and substitutes. The assignment and supervision of substitute teachers is made by the supervisor and assistant supervisor of substitutes. From the supervisors' knowledge of the various conditions of the schools, and their familiarity with the abilities and personalities of the substitute teachers (the supervisor of substitutes gives regular instruction in the normal school), they are able to place substitutes in those positions for which they have demonstrated some fitness. Beyond question, the substitute service has been strengthened materially by this process; both teachers and pupils, in most cases, have benefited from assignments made in accordance with an organized knowledge of the individual conditions.

But it is in the classroom, with the substitute teacher, that the value of substitute supervision is manifest; there problems at first hand are met and solved: The timid substitute is encouraged; the diffident, inspirited; the unskilful, instructed; the unsystematic, guided; the slothful, spurred; the free, checked; the severe, softened, and the too lenient, strengthened. To each is given her own specific, and on subsequent visits, previous instructions are checked up and results noted and recorded. Substituting under the very best conditions is difficult, exhausting, and often discouraging. The position of supervisor of substitutes calls for a deep knowledge of human nature, an eye to detect the distress of a substitute, an ear to hear the unuttered appeal, a head to plan, and a power to put into execution remedial measures. Teacher training is her function. Not only are the teachers under her lead incidentally strengthening their standing against the time of rerating, but primarily they are rapidly becoming able teachers and rendering service that stands comparison with others more experienced.

The assistant superintendent in charge of the district where a substitute is employed also visits the substitute teacher with the same purpose that the supervisor has. The principal of the district inspects her work and makes a report thereon for

all services in excess of four days. If she has served in an evening school, or has been employed in a vacation school or playground, due credit is given to her for the same by the director.

Annually, in the month of June, normal school graduates who have not received permanent appointments are re-rated by the Board of Superintendents.

Now when the Board of Superintendents considers re-ratings, it has at hand a complete series of records, representing the professional judgment of the officials above mentioned, as to the quality of the services rendered by the several candidates for re-rating, "and with an intimate knowledge of the schools and of the officials making the reports, the members of the Board of Superintendents have the means of determining with reasonable accuracy the comparative merits of the persons appearing on the merit list."

After being re-rated, the names of teachers are placed on a separate list from the one on which they appeared the previous year; this list, which includes the names of all other previously re-rated teachers not permanently appointed, is known as the "prior" list, *i.e.*, prior to the latest or current normal school class. This "prior" list has two classes, "the special" and "Class B," for the same reasons that were given above for the formation of two classes in the latest or current normal school list. Re-rating without an examination by the Board of Superintendents is possible in the case of normal school graduates only.

The ratio of scholarship to teaching power varies during the three years immediately following a candidate's graduation from the normal school, the former decreasing and the latter increasing by an equal quantity, as will be seen below.

The "prior list," which is composed of re-rated teachers, is made up in accordance with the following scheme:

Graduates of 1 year's experience: 500 points on scholarship, and 500 points on teaching.

Graduates of 2 years' experience: 400 points on scholarship, and 600 points on teaching.

Graduates of 3 or more years' experience: 300 points on scholarship, and 700 points on teaching.

The wisdom of this sliding scale of credits given for scholarship and teaching is apparent on inspection: On graduation from the normal school, a teacher may have a low standing resulting often from her failure to show any great power with a class, but once she is given the complete responsibility of a room, a power is evoked which was never before apparent, consequently the mark for her teaching ability will be appreciably higher at her first re-rating.

But after re-rating she is still low on the list: there remain other years in which her teaching credits may be augmented. It not infrequently happens that a teacher's name appears to be hopelessly low on a list, yet in consequence of her increasing maturity and her wider experience, and aided by the wise counsel of the supervisor of substitutes, and by the direction and advice of the principals of districts, she may display an ability hitherto unpromised and so place her name well up the list and receive a permanent appointment.

There is, in addition to the above, a third list, known as the " examined " class, composed of examined candidates: *i.e.*, teachers who are not graduates of the Boston Normal School and who have taught outside the city.

The examination of eligible candidates of all classes in the teaching service is held annually; those who successfully pass are rated in the following manner: The maximum credit given to scholarship is 600 points; the maximum credit for the amount, quality, and character of the candidate's experience is 400 points. In determining this latter credit, the Board of Superintendents gives much weight to the confidential testimony of school officials of the various cities and towns in which the candidates have taught.

The " examined " class, plus the four classes that have been named among the normal school graduates, make up five lists from which a principal may select an elementary teacher, and as the regulation permits of the selection of any one of the highest three on an eligible list, it will be seen that five times

three teachers are eligible at the same time for appointment to an elementary position.

High school teachers are rated under the particular subject which the candidates choose for their major examinations: *e.g.*, English, mathematics, ancient languages, etc.

All other classes of teachers in the service are rated each in the particular branch he elects to teach: *e.g.*, kindergartners, nurses, manual training, sewing, etc.

A question obtrudes itself just here: Does the merit system insure the appointment of good teachers and prevent the appointment of the unfit? It is unquestionably true that a system based on a series of records representing the professional judgment of trained officials is superior to any based on personal choice. Of a hundred names on a rated list, the top third is better, very much superior, to the bottom third. The framers of the merit system employed in the appointment of teachers to the Boston schools do not contend that of two teachers ranked, for example, 775 and 773 respectively, the former is better than the latter, but they do hold that if two teachers are separated by a considerable number of points, both having been weighed by scales as nearly standard as may be, they do hold that the chances of success in the former overbalance those in the latter.

One of the chief objections usually advanced to the appointment of teachers from a merit list is the small number of candidates to which a principal's choice is limited. This objection is more fancied than real. In the elementary lists, as has been shown, a principal not only has fifteen names from which to select, but in practise he often has twice that number. For instance, at the beginning of the school year, when there are an unusual number of vacancies, and when it is certain that twenty or thirty teachers on a list will be taken within twenty-four hours, a principal's choice is very much broadened, for he may go down the list to number twenty or thirty, taking any one he may choose, with a reasonable certainty that his particular nomination will be eligible as a consequence of the number of appointments.

The merit system as at present administered has absolutely

eliminated the baleful effects of " appointment by local or personal influences " which were too apparent under any other system, or rather any other lack of system.

By the merit process, the school committee man has effaced himself from any share in an appointment, save that the right is very properly retained by him to refuse to confirm the same.

Teachers who by their own efforts have slowly and steadily raised their rating thru one, two, three, or more years' time, until they find themselves eligible for appointment, have learned that they can hardly be denied an appointment; almost automatically the place seeks them.

There are, of course, sad cases at the extreme end of the school year when appointments cease; those eligible in June may find themselves crowded down the list in September by their own re-rated listmates or by those who become their listmates by regulation. Then there are those who, in spite of all efforts, find themselves unable to move far away from the bottom of the list. Their chances for appointment are indeed hopeless, but they must, and generally do, say that in fair competition they have been distanced, and the assumption is a sane one that teaching is not their calling. While great sympathy is always due to the unsuccessful teacher, the fundamental fact must not be obscured by any sentimental reasons: Not this or that person's pleasure or disappointment, but school efficiency is the determining factor in an appointment. If an unfit teacher is appointed to a position which should be filled by a competent one, the latter suffers a disappointment just as grave as the former would if the case were reversed. The sum-total of displeasure is the same, but that, again, is not the question; the service has been weakened, and the prime function of the service is the training of youth.

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XI

REVIEWS

The meaning of truth: A Sequel to *Pragmatism*—By WILLIAM JAMES. New York: Longmans, Green & Co., 1909. p. xxii+298. $1.25 net. By mail, $1.38.

In the criticism of this essay, I have been asked by the editor of the REVIEW to have particular regard to the bearings of Professor James's theory of pragmatism upon pedagogical aims and methods. As is indicated in the sub-title, the doctrines set forth in this volume form a sequel to the earlier work on *Pragmatism,* which was published in 1907. The present work contains the elucidation and development of these earlier views, and also a defense of the pragmatic position against the various criticisms which Professor James's brilliant exposition of it has provoked. The essential significance of the idea of pragmatism is exprest in the Preface to the present volume, where the author gives his definition of truth (p. vii), "*The true,* to put it very briefly, *is only the expedient in the way of our thinking, just as the right is only the expedient in the way of our behaving.*"

This seems an exceedingly unfortunate characterization of the nature of truth, for the word *expedient,* whatever reservations Professor James himself may have in mind when he employs it as the test of truth, is, nevertheless, a term whose common connotation can hardly recommend it as the supreme standard either of morality or of knowledge. The *expedient* is not confined in our ordinary usage to that which is wise and sensible solely, but is applied as well to the practises of an over-shrewd calculation and opportunism. Therefore, I am deeply convinced that it would be especially misleading, in the processes of education, to habituate the plastic minds of students in the formative period of their development to rely upon the tests of expediency. It will certainly prove to be a most disastrous habit if there is any lurking confusion of

thought, and a consequent failure to discriminate between the expedient which has the true and the expedient which has a false ring to it. To teach the doctrine of truth which rests upon an analogy with the doctrine of the right, and then in turn to identify the right with that which is *expedient,* is merely to teach an intellectual error, by means of a perverted notion of morality. It is true that Professor James qualifies the meaning which he himself attaches to the term *expedient* by adding to the definition, above quoted, the further condition,—" the expedient in the long run and on the whole of course " (p. vii).

However, the student who is being led into the way of pragmatism as a practical working method of study, as well as of conduct, will become impatient at the slow returns which come to his notice regarding the nature of expediency in the long run and on the whole; and in the meantime he will fall into the easy habit of applying the convenient test of expediency to the *short runs* of experience, and will be abundantly satisfied, both in his thinking and in his conduct, with temporary adjustments, makeshifts of compromise, and with inaccurate and inadequate results. He who has learned the lesson of expediency, and it is an easy lesson to learn, is not apt to wait for the tardy revelations of a cumulative experience, but will seek a short-cut to the immediate ends which incite his efforts by their obvious rewards. But the present lure does not always represent the permanently true and good. The habit of following the lead of expediency induces too often a myopia both of the intellectual and the moral vision. Another characteristic feature of Professor James's view of the nature of truth is that truth is something which happens to an idea, rather than its being in any sense an inherent quality of an idea itself. He says, for instance, in this connection: " The truth of an idea is not a stagnant property inherent in it. Truth *happens* to an idea. It *becomes* true, is made true by events " (p. vi).

Such a definition brings to the foreground the element of contingency which, according to the pragmatist, attaches to all truth in whatsoever form it may find expression. In the

earlier work on *Pragmatism,* Professor James declares that "we have to live today by what truth we can get today, and be ready tomorrow to call it falsehood" (p. 223). Now, this view of the nature of truth applied practically by any student to the acquisition, and also to the criticism of knowledge, must result in the inevitable tendency to adapt one's thoughts to that which is forever fluctuating and variable. Consequently, if one is taught that the body of knowledge is a mass of changing elements with no determining constants whatsoever, it will follow necessarily that, in his thinking, the student will fall into slovenly and lax methods of inquiry, and will not have the faintest conception of the rigor of exact scholarship.

The mind of a student in the process of formation must be trained in such methods of investigation and in such habits of judgment and of inference that he will early come to recognize the existence of certain unchanging and unchangeable necessities of thought.

Moreover, pragmatism confuses the ground of truth with its verification. It is not possible to obliterate the essential distinction between the two without hopelessly bewildering and, at the same time, damaging one's fundamental logical sense. For instance, the engineering plans and calculations connected with the Hudson tunnels were proved to be true, inasmuch as the two excavations, pushed forward from either bank of the river, met amid stream with an astonishing precision of coincidence, whose margin of error was a negligible quantity. This was the pragmatic test, the verification, whose importance and significance can not be too highly regarded. Such a test, however, only revealed what the expert engineers had built upon from the beginning, and without which the stupendous achievement would never have been dreamed of, much less actually attempted and accomplished: namely, a supreme confidence in the unvarying constancy of those mechanical principles in which their plans and calculations were securely grounded. Before beginning so ambitious an enterprise, and investing in it so vast sums of money, there had to be the assurance beyond the peradventure of a doubt that in attempting the solution of the practical problem set before

them, the engineers were dealing with certain dependable constants, concerning which there could be no breath of suspicion that possibly "we live today by what truth we can get today, and must be ready tomorrow to call it falsehood." Such may be the creed of the philosopher, but most certainly it can not be regarded as the working hypothesis of the practical engineer. By its workings pragmatism must stand or fall—and it is just in a practical situation such as this that the man whose work and reputation both are at stake will insist that he must know beforehand how things must turn out, and such knowledge is available only upon the supposition that an idea turns out to be true only when it is grounded in a truth that is constant, and for that very reason. There are many undertakings in life that can never be embarked upon at all, unless one can distinctly reckon upon their ultimate verification from the beginning. And this can be done with confidence only when the contemplated project is conducted upon certain fundamental principles which in turn rest upon a rock basis of necessity. It is not the idea of what *may* be, but of what *must* be, that gives assurance for the future as well as the passing present.

Again, Professor James defines truth as "consisting in such a working on the part of one's beliefs as may bring a man into satisfactory relations with objects to which these latter point" (p. 262). It is obvious that what is false can not prove satisfactory, at least in the long run and on the whole. Its flaws and weak places must sooner or later discover themselves. Nevertheless, it is quite as evident that the true is not always immediately recognized as satisfactory, particularly in conduct, and our choices do not wait upon a vindication by their results. Consequently to hold before the student, as the test of truth, that which is *satisfactory,* is merely to shift the center of gravity in his disposition to the side toward which human nature has always listed. The subjective test of the feeling of satisfaction is an exceedingly dangerous one to emphasize in the methods of education. A student needs, above all things, some objective standard for the very purpose of checking up the results of his subjective attitudes. He

should be taught to take, as far as possible, a detached view of things. If, on the contrary, he learns to recognize truth by the comfortable test of that which will bring him into satisfactory relations, he has started on a road in which the supreme satisfactions of life will be missed altogether. For that which often proves to be the most satisfactory of our experiences, appears suddenly, by the way, where our quest has been directed to quite another end.

In all fairness to Professor James, however, it should be stated that he interprets *satisfactory*, also, in the sense of a harmony or coherency of our ideas. He says: "The pragmatist, whenever he says 'reality,' means in the first instance what may count for the man himself as a reality, what he believes at the moment to be such. Sometimes the reality is a concrete, sensible experience. The idea, for example, may be that a certain door opens into a room where a glass of beer may be bought If opening the door leads to the actual sight and taste of the beer, the man calls the idea true. Or his idea may be that of an abstract relation, say of that between the sides and hypothenuse of a triangle, such a relation being, of course, a reality quite as much as a glass of beer is. If the thought of such a relation leads him to draw auxiliary lines and to compare the figures they make, he may, at last, perceiving one equality after another, *see* the relation thought of, by a vision quite as particular and direct as the taste of the beer. If he does so, he calls *that* idea, also, true" (p. 236 f).

The point of the whole discussion lies in this paragraph which I have just quoted; for the two instances which Professor James cites differ essentially and radically. In the case of the beer the verification by the concrete, sensible presence reveals what in that particular instance happens to be true; the course of reasoning in the other case, even by the aid of actual lines and angles, reveals what *must* be true. One is a contingent fact adaptable to the pragmatic test by its very nature. The other is a system of necessary and universal relations which evidences its truth once and forever by the compulsion of thought implication and consistency. And this, therefore, is the dilemma with which Professor James is con-

fronted: If the test of truth is verification by a concrete, sensible presence, it is inadequate; if, however, it is also proved by means of the congruence and consistency of our body of necessary and universal ideas, it can no longer be properly characterized as pragmatic. The concrete, sensible presence gives direct and unimpeachable evidence that the sun moves around the earth as the center of a terrestrial system. Our thought declares this verification by the senses as wholly illusory and false. And the testimony of our thought is based upon the fundamental necessities of logical implication.

Moreover, Professor James declares that every test of truth is to be discovered solely in some particular instance. He says, in point: "Each reality verifies and validates its own idea exclusively; and in each case the verification consists in the satisfactorily ending consequences, mental or physical, which the idea was able to set up. These 'workings' differ in every single instance, they never transcend experience, they consist of particulars, mental or sensible, and they admit of concrete description in every individual case" (p. 237).

Let us examine this statement in the light of Professor James's own illustration of the relation between the hypothenuse and the sides of a triangle. Every student of geometry knows that while the demonstration of the theorem that the square on the hypothenuse is equal to the sum of the squares on the two sides, is exhibited in the original and auxiliary lines of a particular triangle, nevertheless, *all the particular features* of the triangle in question are regarded as wholly irrelevant to the cogency of the proof. Moreover, if in the demonstration any *particular* property of the triangle in question is employed as a premise in the course of the reasoning, the conclusion which depends upon it is wholly invalidated. The demonstration consists in *transcending* the particular characteristics of the triangle under observation, at every step of the process, and in employing only those relations which are common to all triangles and, therefore, universal. Consequently, when once you have established the relation for the triangle which is before you as a "concrete, sensible presence," you have established the same relation for all tri-

angles and for all time. No further pragmatic verification will ever be necessary. It is, moreover, of great pedagogical value to realize that a student may be taught the art of transmuting his particular knowledge of a special case into a form which will have universal significance and validity. When a student has once discovered the universal significance of any particular phenomenon in his experience, he has acquired not merely a new item of information, but also a new instrument of knowledge as well.

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A study of the drama—By BRANDER MATTHEWS, Professor of Dramatic Literature in Columbia University. Boston: Houghton Mifflin Company. Student's edition, x+320 p. 14 illustrations. $1.25 net.

Critics of the drama fall into two classes, those who regard the drama as a type of literature differentiated from other types chiefly as it is composed in dialog, and those who regard it as an art form in which action is represented by action and literature is an enhancement merely and not an essential. Critics of the former class apply to the drama precisely the tests that they apply to literature in general; to read a play is for them equivalent to seeing a play enacted. They duly consider the consistency of plot, the vitality of characterization, the beauty of expression, and the author's philosophy of life, but they regard the presentation of these things in dramatic form as little more than accidental. Critics of the second class, on the other hand, conceive of the drama as designed to be performed by actors upon a stage before an audience, and as necessarily conditioned by these facts.

Now it may safely be said that every great dramatist in composing and in judging his own work has taken the latter point of view; but it is equally true that the more idealistic critics of literature have not infrequently inclined to neglect the significance of the drama as such. They have been so intent upon studying what it possesses in common with the epic and prose fiction that they have omitted to observe the reasons for its radical difference from these other forms of

art. To make clear the nature of the acted drama is, therefore, no work of supererogation. And when the task is performed by so acute and learned a critic as Professor Brander Matthews it may justly command wide attention.

Professor Matthews is today the most distinguished exponent of the theory that the acted drama is alone the drama, and that the conditions of its performance determine the nature of the play and the laws for its appreciation. This theory he has set forth at various times in the past, but never so winningly as now, in *A study of the drama*—thirteen connected essays dealing with dramatic technic and designed for the lover of the stage rather than the playwright.

With the main contentions of this book, few who read it carefully will disagree. The influence upon the playwright of the shape and size of the theater for which he composes ought to be obvious. Pieces designed for presentation in the vast theater of the Greeks are of necessity unlike those prepared for the Elizabethan platform stage or for the picture-frame stage of the present day. That the capabilities of certain actors have induced dramatists from the earliest period to shape their pieces to exhibit these capabilities to the best advantage is certain. It is certain, also, that the dramatist has always been affected by the fact that he was writing for a crowd instead of for individuals, and still further, for a particular kind of crowd. The drama, indeed, is a " function of the crowd," communal in origin and social in appeal. The sociologists have shown us that the mood of a crowd is not the mood of the separate individuals it contains, but rather a more primitive, elemental, and emotional mood. The dramatist, in appealing to the crowd, must keep, then, to the highway of human thought and passion, and not stray into by-paths of speculation or morbid feeling. He must also respect the sentiments of his particular audience. As the Abbé d'Aubignac long ago maintained, the playwright can not hope in two or three hours to change the slowly formed opinions and prejudices of the rank and file of his audience, hence to conform to these must be his aim. This doctrine Professor Matthews reiterates, and he finds in the appeal of the drama

to the multitude reason for vaunting faith in the democratic theater. "It is good," he writes, "for every man, even if he is truly a poet, that he should go down into the arena and meet his fellowmen face to face. There is mischief in any attempt to found an endowed theater which shall not rely for the major part of its support upon the public as a whole."

In discussing all these points, and such other matters as the conventions of the theater, the three unities, and the details of play-construction, Professor Matthews writes with lucidity and charm, offering apt illustrations of his theories drawn from the practise of the Greek, the French, and the English stage. In his remarks upon the short-comings of the Elizabethan playwrights, in his treatment of morality and characterization in the drama, he is eminently sensible.

Thruout the book, indeed, there are but two or three propositions that any intelligent reader will question. Some may doubt the propriety of ascribing so large an influence upon the drama to the physical conditions of the theater; some may doubt the necessity for so generally condemning the drama that is intended merely to be read; and some may doubt the sufficiency of the law of the drama here adopted from Brunetière. How far are such doubts legitimate?

Professor Matthews accepts Brunetière's notion of the drama as exhibiting human will clashing against obstacles. According to this view, action in the drama is the result of conscious volition, whereas in the novel the hero may be passive, a person to whom things merely happen. It may be objected, however, that plot of any kind—epic, novelistic, or dramatic—depends upon the clash of opposing forces. The *Iliad* presents such a clash as well as the *Agamemnon;* novels like *Kenilworth* and *The toilers of the sea* are sufficiently volitional. Thus, the drama can claim no monopoly of struggle and opposition. Granted that it does rely more largely than the novel or the epic upon the assertion of its hero's will, yet the law of its being must take into account those features wherein it differs wholly from other types. Such features are its representation of action directly by action, and its use of "confrontation," a principle recently

expounded by Professor Ethel D. Puffer in her *Psychology of beauty.*

It is Miss Puffer's theory that the end of beauty is always for the perceiver a perfect moment of unity and self-completeness, of repose in excitement. In the spectator of a drama, stimulation and repose are produced by the simultaneous realization of two opposing forces mutually checking emotional impulses. "It is only in this simultaneous realization," she says, "that the drama differs from all other forms of art. When the two antagonistic purposes are actually presented to the onlooker in the same moment of time, then alone can be felt the vividness of realization, the tension of conflict, the balance of emotion, the alleviation of the true katharsis." The drama is most itself, accordingly, in these climaxes of confrontation, but progress in the play as a means of rising to such climaxes must be allowed for. "Thus the development has the beauty which lies in a necessary progress; but this beauty is common to the epic, the novel, and the symphony, while the unity given by the confrontation and tension of simultaneous forces belongs to the drama alone."

Such a theory, it will be observed, tends merely to supplement and not to supplant that of Brunetière. But Brunetière's classification of dramatic species acording to the kind of obstacles encountered by the will of the protagonist, is surely open to question. Professor Matthews states the classification as follows: "If the obstacles against which the will of the hero has to contend are insurmountable—Fate or Providence, or the laws of nature,—then there is tragedy, and the end of the struggle is likely to be death, since the hero is defeated in advance. But if these obstacles are not absolutely insurmountable, being only social conventions and human prejudices, then the hero has a possible chance to attain his desire,—and in this case we have the serious drama without an inevitably fatal ending. Change this obstacle a little, equalize the conditions of the struggle, set two human wills in opposition,—and we have comedy. And if the obstacle is of a still lower order, merely an absurdity of custom, for instance, we find ourselves in farce."

Now is it true that two human wills in opposition will produce comedy? May they not quite as readily produce tragedy if only the opposition be strong enough? Is it true that the will of the hero opposing a social convention must of necessity result in the serious drama? May not such a conflict produce either comedy or tragedy, according to the author's treatment of the conflict?

Those inclined to disagree with Professor Matthews's disdain for the drama that is intended merely to be read, should thoroly digest his admirable chapter entitled "Poetic drama and dramatic poem." Here he admits that compositions in dialog designed only to be read in the study are legitimate so long as they make no pretense to be genuine plays. This confession ought to appease the devotees of the so-called closet-drama, yet Professor Matthews can not quite conceal his low opinion of the thing itself. "A mere poem in dialog," he writes, "not destined for performance by actors, in a theater, and before an audience, may have interest of its own to the chosen few who can persuade themselves that they like that sort of thing; but it is not what the rest of us want." Many of us, however, do continue to want works like Goethe's *Faust* or Shelley's *Prometheus* or Swinburne's *Atalanta,* and few of us run the risk of supposing these poems in dialog to be genuine plays.

A final suggestion from the devil's advocate may lead some readers of this book to ask whether it does not go too far in regarding the drama as the product of theatrical forces. It is easy when once we have realized the potency of physical conditions in influencing a play to exaggerate that influence. Did Shakspere make Holofernes gaunt and Casca lean merely because there happened to be a raw-boned actor in his company to play these parts? Was Marlowe's rant due to the fact that his chief actor, Alleyne, was a tremendous fellow who could tear a passion to tatters? Was the oratorical bombast of the Elizabethan stage a result of the player's standing far out on a platform in the midst of the groundlings like any stump speaker? Must we, in other words, find for every spiritual characteristic of a play a material basis?

This is what Castelvetro did in the sixteenth century, and

what Taine in the nineteenth century urged for other arts. But Professor Matthews safely steers around the rock of danger. While he insists that the great plays of the world can not properly be understood without a knowledge of the conditions attending their performance, he readily admits that they are great and enduring chiefly by virtue of their literary qualities. While he shows that some of the leading characters of the stage have been designed to suit particular persons, he affirms that all such rôles transcend the limitations of this or that actor's personality. While he traces the French respect for the unity of place to a reaction against the late survival in France of the "simultaneous set," he recognizes also the national taste for restraint and order as a cause prepotent in attaching the French to the unities. While he fixes his eye upon the structure of the drama rather than upon its content, he frankly declares that "the great plays are great only because a worthy content is presented in worthy form," and he states at the outset that his book "discusses only incidentally the psychology, the philosophy, and the poetry which we now admire in these pieces."

In its very emphasis upon dramatic values, as distinguished from the purely literary, lie the significance and worth of *A study of the drama.* It is written by a master of the art of exposition as well as by a master of dramatic history and technic. It does what books of scholarship too seldom do—it both illuminates and entertains. No student of letters, no teacher of literature, no casual playgoer, even, can afford to neglect this *vade mecum* for the lover of the stage.

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XII

NOTES AND NEWS

A Severe Indictment

Surely our colleges, whatever else they may yield, are not giving us trained men, and, in the opinion of the *Argonaut,* they never will do it until they reorganize and reinspire the teachings and influences of collegiate life. The *Argonaut* has always been predisposed in favor of the college man. Its work in all departments calls imperatively for discipline, judgment, and some culture. In recruiting its service, trial has again and again been made of the college-bred youth, but never with any approach to success. We have never yet been able to find a college-bred youth, without a long subsequent practical drill, who could write clean English, or who could even write a hand which the printer could read. We have never yet found one whose knowledge even within the lines of his special study was dependable or ready. We have never found one who did not wish to begin at the top of the ladder, nor one who did not find it imperatively necessary on the very busiest day of the year to cut his duties for the sake of attending some kind of an athletic or fraternity meet. Not one of those from Frank Pixley down, whose work in the *Argonaut* has been an element in its character and influence, has been a man of college breeding. This remark applies not only to the *Argonaut,* but to many other publications of the country representative of journalism in its higher rank. It is only a few months ago that there was assembled at a dinner table in the Century Club at New York a little group representing the very highest forces in American journalism—including the editor of *Harper's Monthly,* the then editor of the *Century,* and others of equal note—when, thru a chance inquiry, it developed that only one present was a college-bred man. In other spheres, too, the college-bred man is not found to be a

trained man—trained in the sense of being equipped above others for the larger duties of social and other kinds of progress. Luther Burbank has reluctantly borne testimony to the fact that he has never yet been able in his work to make use of a college-bred youth. Those that he has tried, he declares, are so wedded to theories, so instructive in their mental attitude, as to be an obstruction rather than a help in his operations. All of which may be taken to indicate that the young collegian is not always, if ever, a trained man in the sense of being prepared beyond other men for the higher opportunities and duties of life. The trouble with the ordinary college career is that it tends, thru its diverting side issues—athletic, social, and other,—to vagrant habits, both physical and mental. Our colleges, it is true, ought to give us trained men, and this is only another way of saying that they should reform their practise and discipline.—[The *Argonaut,* San Francisco, Cal.]

National Education Association at Boston

For the second time within eight years, Boston proved itself to be the best and most attractive meeting-place in the United States for the National Education Association. It is really a pity that considerations of policy compel the executive officers to take the meetings year by year to places that in themselves have little or nothing to attract the great body of teachers, who wish to combine an agreeable and instructive holiday with their attendance upon the great professional meeting of the year. Boston, Washington, Denver, Los Angeles, and San Francisco are the cities thru which the annual meetings might well swing in a definite cycle.

When so much is said, not very much that is pleasant remains to be added concerning the Boston meeting of 1910. To one who spent the entire week in attending meetings and receptions, in talking with teachers, high and low, from all parts of the country, and in watching without the slightest feeling of partisanship what went on, and who was able to compare his impressions with those gained at St. Paul in 1890, at Saratoga in 1892, at Denver in 1895, at Los Angeles

in 1899, and again at Denver in 1909, a feeling of sadness and depression was uppermost. The signs of hard, constructive thinking about education on philosophical lines were wholly missing. The general program can only be described as poor, and while the attendance upon some of the department meetings was large, it was clearly due rather to the wide range and large number of topics discust than to the quality of the papers presented. Indeed, it almost seemed as if Dr. Harris and the little group of brilliant thinkers who surrounded and accompanied him at these meetings for so many years, had lived and worked and thought in vain. A dispassionate critic will look, without finding, for any note of leadership, for any note of constructive power, or for any note of genuinely clear thinking in the papers presented at Boston. Not a few of the papers that were most favorably received were nothing more than snarling and destructive criticisms of existing phases of teaching and administration. Men and women who should have known better, discredited themselves and their papers by unwarranted, careless, and often flatly untrue attacks upon the existing order in the schools. It really seemed as if the muck-raking passion had seized hold of educational discussion. The total impression produced was sad and discouraging. It must be that there are other and stronger minds and characters in the teaching profession of the United States than were represented upon the program at Boston.

One whose mind goes back to an earlier and better day in the Association's history was shocked by the exhibitions of office-seeking, wire-pulling, and petty politics, all of which have invaded the Association during the past few years. The absence of a number of the best-known members of the Association was openly attributed to the fact that they were desirous of showing their disapproval of political methods in the conduct of the Association's business, by remaining away from meetings where these methods are countenanced. In fact, so wide-spread was the disapproval that at least four States, at the meetings of their active members, past formal votes of condemnation upon one set of political boomers and wire-pullers. The habit of office-seeking, now so much in evidence,

has quite destroyed the harmony and good feeling among members of the Association which so long prevailed, and which made these annual gatherings so interesting and so agreeable.

So extreme was the desire for office that the report of the nominating committee—which has heretofore always been accepted by the Association, no matter how hard fought has been the contest in the committee itself—was set aside in the meeting of the active members on formal motion, and a president was elected who was nominated from the floor. There is no criticism to be made of this action on formal or parliamentary grounds; it was quite within the rights of the active members. But, to take this action in the interest of a particular candidate who had not received the support of a majority of the committee duly chosen to select a president, and in the face of the fact that the committee had nominated a man of national reputation and of long and devoted service to the Association itself, was injudicious, to say the least. If such procedure is to prevail in the future, it will be very difficult to secure the consent of any of the real educational leaders of the country to the use of their names in connection with the presidency. If the practise of half a century is to be overturned, then it had better not be overturned by and for the benefit of a little group of educational politicians who are on the ground, but rather by permitting every active member to vote by ballot sent to the secretary, making his choice from among nominations made and submitted some time in advance of the meeting.

The general meeting of active members was a sorry sight. The task of conducting the business in order and with decorum was quite beyond the powers of President Joyner. If one may judge from the expressions of opinion of those members of the Association who have really rendered it service, and who have lookt upon it as an opportunity to advance educational principles and educational interests without regard to office or power or distinction of any kind, the Boston meeting of 1910 reached the low-water mark and left behind it an unfavorable impression which it will take many years to remove.